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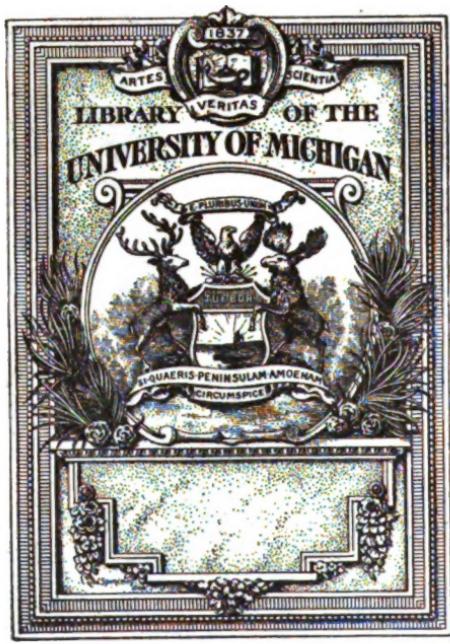
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FEB 8 1909

THE UNIVERSITY BULLETINS

NINTH SERIES: NO. 2—PART 2

# UNIVERSITY OF PENNSYLVANIA

## CATALOGUE

1908-1909



Founded 1740

PHILADELPHIA  
PUBLISHED BY THE UNIVERSITY  
JANUARY, 1909  
BI-MONTHLY







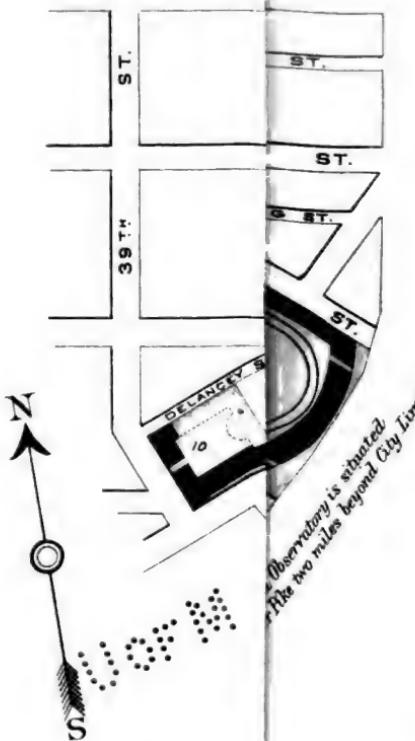


# UNIVERSITY

## LOCATION

100 200 300  
SCALE: 1

TOTAL ACREAGE OF UNIVERSITY GROUNDS



1. College Hall.
2. Logan Hall.
3. Robert Hare Che
4. University Hospit
5. Gibson Wing for on.
6. Nurses' Home.
7. Maternity Hospit
8. Lodge and Mortuary of Physics.
9. Medical Laborato
10. Veterinary Hall & building.
11. Biological Hall at
12. Free Museum of

CATALOGUE  
OF THE  
UNIVERSITY OF PENNSYLVANIA



Founded 1740

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1908-1909

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PHILADELPHIA  
PRINTED FOR THE UNIVERSITY  
JANUARY, 1909

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## TABLE OF CONTENTS.

	PAGE
<b>PART I.—THE UNIVERSITY .....</b>	<b>5-56</b>
General Information .....	7
Calendar .....	8-11
Chronological Table .....	13-14
Historical Sketch .....	14-21
Organization .....	22
Board of Trustees .....	23-24
Administrative Officers .....	25-28
Officers of Instruction .....	29-56
<b>PART II.—FACULTIES AND DEPARTMENTS OF INSTRUCTION .....</b>	<b>57-526</b>
The College .....	59-306
General Information .....	59-117
The School of Arts .....	118-125
The Towne Scientific School .....	126-166
The Wharton School of Finance and Commerce .....	167-171
Instruction .....	172-270
The Evening School of Accounts and Finance .....	271-279
The College Courses for Teachers .....	280-294
The Saturday Courses for Teachers .....	295-298
The Summer School (1908) .....	299-306
Graduate School .....	307-361
Department of Law .....	362-373
Department of Medicine .....	374-466
University Hospital .....	467-476
Department of Dentistry .....	477-506
Department of Veterinary Medicine .....	507-525
Veterinary Hospital .....	526
<b>PART III.—AUXILIARY DEPARTMENTS .....</b>	<b>527-556</b>
University Library .....	529-536
Wistar Institute of Anatomy and Biology .....	537-540
Laboratory of Hygiene .....	541-546
Flower Astronomical Observatory .....	547

## TABLE OF CONTENTS.

	PAGE
<b>PART III.—AUXILIARY DEPARTMENTS—<i>Continued.</i></b>	
Department of Physical Education .....	548—551
Department of Archaeology .....	552—556
<b>PART IV.—STANDING COMMITTEES .....</b>	<b>557—566</b>
On Graduates' Appointments.....	559—560
On Publications .....	561—563
On Athletics .....	564—565
On Non-Athletic Organizations .....	566
<b>PART V.—FINANCIAL OBLIGATIONS AND DORMITORIES...</b>	<b>567—576</b>
<b>PART VI.—DEGREES, HONORS AND PRIZES—1908 .....</b>	<b>577—596</b>
<b>PART VII.—UNDERGRADUATE AND ALUMNI SOCIETIES .</b>	<b>597—614</b>
<b>PART VIII.—LISTS OF STUDENTS .....</b>	<b>615—751</b>
<b>PART IX.—DIRECTORY OF OFFICERS .....</b>	<b>753—766</b>
<b>PART X.—GENERAL SUMMARIES AND INDEX.....</b>	<b>767—776</b>

**PART I**  
—  
**THE UNIVERSITY**



## THE UNIVERSITY.

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### General Information.

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#### LOCATION.

The buildings of the University of Pennsylvania, thirty in number, are situated in Philadelphia, on property covering an area of over fifty-nine acres. The University may be reached from the various railroad stations as follows: From the West Philadelphia station of the Pennsylvania Railroad, on foot west on Woodland avenue, a walk of less than ten minutes; from the Philadelphia and Reading Terminal station, by the electric cars on Market street, or subway, west to Thirty-fourth street, thence on foot south to Woodland avenue; or from the Baltimore and Ohio Railroad station by a walk of one square south to Walnut street, thence by car over the bridge west to Thirty-fourth street.

#### APPLICATIONS FOR CATALOGUES, ETC.

Applications for copies of the annual University Catalogue (published in December) should be addressed to the Assistant Secretary of the University of Pennsylvania, Philadelphia, Pa.

The University also issues pamphlets relating to the several Departments or to individual courses and often containing information not found in the Catalogue. Inquirers interested in special branches of work only are advised to apply for these pamphlets, not for the Catalogue.

All letters of inquiry regarding the internal regulations and requirements in each separate Department of the University should be addressed to the Dean of that Department (see *Administrative Officers*, following) and *not* to the Assistant Secretary of the University.

#### ACCOMMODATIONS FOR STUDENTS.

Lodging for students to the number of more than seven hundred and fifty is provided in the present dormitory system, which comprises an extended group of contiguous houses fronting upon three open courts. Plans of the dormitories, prices, and other details may be obtained upon application to the Bursar of the University, College Hall.

Board and lodging may be obtained also in the immediate vicinity of the University. Upon application at the offices of the Deans of the several Departments (see *Administrative Officers*, following), lists of approved boarding-houses may be seen.

1908.							1909.							
JULY.							JANUARY.							
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	
·	·	·	1	2	3	4	3	4	5	6	7	1	2	3
5	6	7	8	9	10	11	10	11	12	13	14	15	16	17
12	13	14	15	16	17	18	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	18	19	20	21	22	23	24	19
26	27	28	29	30	31	·	24	25	26	27	28	29	30	31
·	·	·	·	·	·	·	31	·	·	·	·	·	·	·
AUGUST.							FEBRUARY.							
1	2	3	4	5	6	7	1	2	3	4	5	6	7	
8	9	10	11	12	13	14	8	9	10	11	12	13	14	
15	16	17	18	19	20	21	14	15	16	17	18	19	20	
22	23	24	25	26	27	28	21	22	23	24	25	26	27	
29	30	31	·	·	·	·	28	·	·	·	·	·	·	
SEPTEMBER.							MARCH.							
1	2	3	4	5	6	7	1	2	3	4	5	6	7	
8	9	10	11	12	13	14	8	9	10	11	12	13	14	
15	16	17	18	19	20	21	14	15	16	17	18	19	20	
22	23	24	25	26	27	28	21	22	23	24	25	26	27	
29	30	31	·	·	·	·	28	29	30	31	·	·	·	
OCTOBER.							APRIL.							
1	2	3	4	5	6	7	1	2	3	4	5	6	7	
8	9	10	11	12	13	14	8	9	10	11	12	13	14	
15	16	17	18	19	20	21	14	15	16	17	18	19	20	
22	23	24	25	26	27	28	21	22	23	24	25	26	27	
29	30	31	·	·	·	·	28	29	30	31	·	·	·	
NOVEMBER.							MAY.							
1	2	3	4	5	6	7	1	2	3	4	5	6	7	
8	9	10	11	12	13	14	8	9	10	11	12	13	14	
15	16	17	18	19	20	21	14	15	16	17	18	19	20	
22	23	24	25	26	27	28	21	22	23	24	25	26	27	
29	30	31	·	·	·	·	28	29	30	31	·	·	·	
DECEMBER.							JUNE.							
1	2	3	4	5	6	7	1	2	3	4	5	6	7	
8	9	10	11	12	13	14	8	9	10	11	12	13	14	
15	16	17	18	19	20	21	14	15	16	17	18	19	20	
22	23	24	25	26	27	28	21	22	23	24	25	26	27	
29	30	31	·	·	·	·	28	29	30	31	·	·	·	

## **CALENDAR FOR 1908-09, 1909-10.**

**Meetings of the Corporation are held on the first Tuesday in each month.**

### **1908.**

Sept. 25, Friday.....Session begins: College, 10 A. M.; Department of Law, 11 A. M.; Departments of Medicine, Dentistry and Veterinary Medicine, 8 P. M.  
Sept. 26, Saturday....Saturday Courses and College Courses for Teachers begin, 10 A. M.  
Sept. 29, Tuesday....Session begins: Graduate School, 9 A. M.  
Nov. 25, Wednesday...Thanksgiving Recess begins: all Departments, 6 P. M.  
Nov. 30, Monday.....Thanksgiving Recess ends: all Departments, 9 A. M.  
Dec. 22, Tuesday....Christmas Recess begins: all Departments, 6 P. M.

### **1909.**

Jan. 4, Monday.....Christmas Recess ends: all Departments, 9 A. M.  
Jan. 18, Monday.....Entrance Examinations: College, 4.30 P. M.  
Jan. 25, Monday.....Mid-Year Examinations: College, 9 A. M.  
Feb. 1, Monday.....Second Term begins: College, 9 A. M.  
Feb. 22, Monday.....University Day. Recess: all Departments.  
April 8, Thursday....Easter Recess begins: all Departments, 6 P. M.  
April 13, Tuesday....Easter Recess ends: Department of Law, 9 A. M. Last day for receipt of Prize Essays, Department of Law  
April 19, Monday....Easter Recess ends: College, Departments of Medicine, Dentistry and Veterinary Medicine, and Graduate School, 9 A. M.  
May 1, Saturday....Last day for receipt of Theses, Prize Essays and Reports: College, and Department of Medicine.  
May 29, Saturday....Saturday Courses and College Courses for Teachers close, 5 P. M.  
May 31, Monday.....Final Examinations: College, and Department of Law, 9 A. M.  
June 16, Wednesday..Commencement, 11 A. M.  
June 17, Thursday....Registration of Candidates for Admission: College, 9 A. M.  
June 17, Thursday....Entrance Examinations: College, and Departments of Law and Medicine, 9 A. M.  
July 6, Tuesday.....Summer School Session begins: College, 9 A. M.  
Aug. 17, Tuesday....Summer School Session ends: College, 6 P.M.

**1909.****SUMMER RECESS.**

Sept. 16, Thursday.... Re-examination of Conditioned Students: College, 9 A. M.  
 Sept. 16, Thursday.... Competitive Examination for Dental Scholarships, 9 A. M.  
 Sept. 16, Thursday.... Registration of Candidates for Admission: College, and Department of \*Medicine, 9. A. M. to 11 A. M.  
 Sept. 16, Thursday.... Entrance Examinations: College, and Departments of Law and Medicine, 9 A. M.  
 Sept. 18, Saturday.... Entrance Examinations: Department of Dentistry, 9 A. M.  
 Sept. 20, Monday.... Competitive Examination for Medical Scholarships, 10 A. M.  
 Sept. 20, Monday.... Re-examinations, and Examinations for Admission to Advanced Standing: Department of Medicine, 2 P. M.  
 Sept. 21, Tuesday.... Entrance Examinations: Department of Veterinary Medicine, 10 A. M.  
 Sept. 21, Tuesday.... Re-examination of Conditioned Students, and Examinations for Admission to Advanced Standing: Department of Dentistry, 10 A. M.  
 Sept. 24, Friday..... Session begins: College, 10 A. M.; Department of Law, 11 A. M.; Departments of Medicine, Dentistry and Veterinary Medicine, 8 P. M.  
 Sept. 25, Saturday.... Saturday Courses and College Courses for Teachers begin, 10 A. M.  
 Sept. 28, Tuesday.... Session begins: Graduate School, 9 A. M.  
 Sept. 30, Thursday.... Opening Exercises: Graduate School, 3 P. M.  
 Nov. 24, Wednesday.... Thanksgiving Recess begins: all Departments, 6 P. M.  
 Nov. 29, Monday.... Thanksgiving Recess ends: all Departments, 9 A. M.  
 Dec. 23, Thursday.... Christmas Recess begins: all Departments, 6 P. M.

**1910.**

Jan. 3, Monday.... Christmas Recess ends: all Departments, 9 A. M.  
 Jan. 17, Monday.... Entrance Examinations: College, 4.30 P. M.  
 Jan. 24, Monday.... Mid-Year Examinations: College, 9 A. M.  
 Jan. 31, Monday.... Second Term begins: College, 9 A. M.  
 Feb. 22, Tuesday.... University Day. Recess: all Departments.  
 Mar. 24, Thursday.... Easter Recess begins: all Departments, 6 P. M.  
 Mar. 29, Tuesday.... Easter Recess ends: Department of Law, 9 A. M. Last day for receipt of Prize Essays, Department of Law.

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\* Registration of candidates for admission by examination.

**1910.**

April 4, Monday . . . . Easter Recess ends: College, Departments of Medicine, Dentistry and Veterinary Medicine, and Graduate School, 9 A. M.

May 2, Monday . . . . Last day for receipt of Theses, Prize Essays and Reports: College, and Department of Medicine.

May 28, Saturday . . . . Saturday Courses and College Courses for Teachers close, 5 P. M.

May 30, Monday . . . . Final Examinations: College, and Department of Law, 9 A. M.

June 15, Wednesday . . . . Commencement, 11 A. M.

June 16, Thursday . . . . Registration of Candidates for Admission: College, 9 A. M.

June 16, Thursday . . . . Entrance Examinations: College, and Departments of Law, Medicine and Veterinary Medicine, 9 A. M.

July 5, Tuesday . . . . Summer School Session begins: College, 9 A. M.

Aug. 13, Saturday . . . . Summer School Session ends: College, 6 P.M.

**SUMMER RECESS.**

Sept. 15, Thursday . . . . Re-examination of Conditioned Students: College, 9 A. M.

Sept. 15, Thursday . . . . Competitive Examinations for Dental Scholarships, 9 A. M.

Sept. 15, Thursday . . . . Registration of Candidates for Admission: College, and Department of \*Medicine, 9 A. M. to 11 A. M.

Sept. 15, Thursday . . . . Entrance Examinations: College, and Departments of Law and Medicine, 9 A. M.

Sept. 17, Saturday . . . . Entrance Examinations: Department of Dentistry, 9 A. M.

Sept. 19, Monday . . . . Competitive Examination for Medical Scholarships, 10 A. M.

Sept. 19, Monday . . . . Re-examinations, and Examinations for Admission to Advanced Standing: Department of Medicine, 2 P. M.

Sept. 20, Tuesday . . . . Entrance Examinations: Department of Veterinary Medicine, 10 A. M.

Sept. 20, Tuesday . . . . Re-examination of Conditioned Students and Examinations for Admission to Advanced Standing: Department of Dentistry, 10 A. M.

Sept. 23, Friday . . . . Session begins: College, and Departments of Law, Medicine, Dentistry and Veterinary Medicine.

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\*Registration of candidates for admission by examination.



# UNIVERSITY OF PENNSYLVANIA.

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## CHRONOLOGICAL TABLE.

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1740—"Charity School" founded.  
1749—The "Academy" established, with which the Charity School was combined.  
1753—Charter granted by Thomas and Richard Penn, incorporating "The Academy and Charitable School."  
1755—"Confirmatory Charter" granted by Thomas and Richard Penn, incorporating "The College, Academy and Charitable School."  
1765—Medical School founded.

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From September, 1777, to June, 1778, owing to the occupation of Philadelphia by British troops, recitations and lectures were suspended.

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1779—Withdrawal of the chartered rights and privileges of The College by the State Assembly, and incorporation of the "University of the State of Pennsylvania."  
1789—Restoration of its chartered rights and privileges to The College.  
1790—Law School founded (re-established in 1850).  
1791—Union of the University of the State of Pennsylvania with The College, under the title of the UNIVERSITY OF PENNSYLVANIA.  
1874—University Hospital established.  
1875—Towne Scientific School founded.  
1877—Department of Music established.  
1878—Dental School founded.  
1881—Wharton School of Finance and Commerce founded.  
1882—Graduate School founded.  
1884—Veterinary School founded.  
1885—Veterinary Hospital established.

- 1885—Department of Physical Education established.
- 1889—Department of Archaeology established.
- 1892—Laboratory of Hygiene established.
- 1892—Wistar Institute of Anatomy and Biology established.
- 1892—Saturday Courses for Teachers established.
- 1896—Houston Club organized.
- 1896—Flower Astronomical Observatory opened.
- 1904—Summer School (College) established.
- 1906—College Courses for Teachers established.

### HISTORICAL SKETCH.

On November 13, 1749, soon after the publication of a pamphlet written by Benjamin Franklin, and entitled, "Proposals relating to the Education of Youth in Pensilvania," twenty-four public-spirited citizens of Philadelphia associated themselves for the purpose of establishing an Academy, and "laying a Foundation for Posterity to erect a Seminary of Learning more extensive and suitable to their future Circumstances." One of their first acts was to negotiate for the possession of a building constructed under a trust established in 1740, and intended to be used for a "Charity School" and as a "House of Publick Worship." This building had been used for the second purpose as early as November, 1740, when the celebrated Whitefield first preached in it; but the charity school had never been set in operation. The Trustees, recognizing the opportunity to have the full purpose of their trust carried out, and "in order that said building may at length be applyed to the good and pious uses originally intended," conveyed it on February 1, 1750, to the Trustees of the Academy by an Indenture, which bound the latter to place, erect, found, establish, or keep a "House of Publick Worship" and also "one free school for the instruction, teaching and education of poor children or scholars within two years from the date of these presents"; and which further provided that they "shall have full power to found, erect, establish and continue in and upon the said house and premises such other school, Academy, college or other seminary of learning" as should not conflict with the original objects of the elder trust. Under these agreements—which in due time were faithfully fulfilled—the Trustees of the Academy took possession of the "New Building," as it was then called, fitted it up for its enlarged uses, engaged a Rector and sub-

ordinate instructors, and formally opened the Academy in the presence of a distinguished company on January 7, 1751. So successful was the undertaking that in 1753 the Trustees secured a Charter for the Academy in the following terms:—

"THOMAS PENN and RICHARD PENN, true and absolute proprietaries and governors in chief of the province of Pennsylvania and counties of Newcastle, Kent and Sussex, on Delaware, To all persons to whom these presents shall come, greeting: *Whereas*, the well-being of a society depends on the education of their youth, as well as, in great measure, the eternal welfare of every individual, by impressing on their tender minds principles of morality and religion, instructing them in the several duties they owe to the society in which they live, and one towards another, giving them the knowledge of languages, and other parts of useful learning necessary thereto, in order to render them serviceable in the several public stations to which they may be called. *And whereas*, it hath been represented to us by Thomas Lawrence, William Allen, John Inglis, Tench Francis, William Masters, Lloyd Zachary, Samuel M'Call, junior, Joseph Turner, Benjamin Franklin, Thomas Leech, William Shippen, Robert Strettell, Philip Syng, Charles Willing, Phineas Bond, Richard Peters, Abraham Taylor, Thomas Bond, Joshua Maddox, William Plumsted, Thomas White, William Coleman, Isaac Norris, and Thomas Cadwalader, of our city of Philadelphia, gentlemen, that for the erecting, establishing, and maintaining an academy within our said city, as well to instruct youth for reward, as poor children whose indigent and helpless circumstances demand the charity of the opulent part of mankind, several benevolent and charitable persons have generously paid, and by subscriptions promised hereafter to pay, into their hands as trustees, for the use of the said academy, divers sums of money, which sums already paid, they, the said trustees, have expended in the purchase of lands well situated, and a building commodious for the uses aforesaid, within our said city, in maintaining an academy there as well for the instruction of poor children on charity, as others whose circumstances have enabled them to pay for their learning, for some time past, and in furnishing the said academy with books, maps, mathematical instruments, and other necessaries of general use therein, according to the intentions of the donors. *And whereas*, the said trustees, to facilitate the progress of so good a work, and to perfect and perpetuate the same, have humbly besought us to incorporate them and their successors.

"Now know ye, That we favoring such pious, useful, generous, and

charitable designs, hoping, through the favor of Almighty God, this academy may prove a nursery of virtue and wisdom, and that it will produce men of dispositions and capacities beneficial to mankind in the various occupations of life; but more particularly suited to the infant state of North America in general, and for other causes and considerations us hereto specially moving, *have* granted, ordained, declared, constituted, and appointed, and by these presents *we do* for us, our heirs and successors, grant, ordain, declare, constitute, and appoint, That the said Thomas Lawrence, and others, as before recited, and such others as shall be from time to time chosen, nominated or elected in their place and stead, shall be one community, corporation and body politic, to have continuance for ever, by the name of The Trustees of the Academy and Charitable School in the Province of Pennsylvania. . . . .

"*In witness* whereof, we have caused these our letters to be made patent; in the twenty-seventh year of the reign of our sovereign lord, George the second, who now is king of Great Britain, France, and Ireland, etc., and in the year of our Lord, one thousand seven hundred and fifty-three."

Under the skilful training of the learned Rev. William Smith, the highest class in this Academy attained that proficiency which, in a College course, would entitle it to a Degree. Accordingly, two years later the Proprietaries were again petitioned to convert the Academy into a College with the power of conferring collegiate degrees. The petition was granted substantially as follows:

"THOMAS PENN and RICHARD PENN, true and absolute proprietaries of the province of Pennsylvania, etc., to all persons to whom these presents shall come, greeting:

"*And whereas*, the said trustees have . . . . represented, That since our granting our said recited charter, the academy therein mentioned, by the blessing of Almighty God, is greatly improved, being now well provided with masters, not only in the learned languages, but also in the liberal arts and sciences, and that one class of hopeful students has now attained to that station in learning and science, by which, in all well-constituted seminaries, youth are entitled to their first *degree*. *Now know ye also*, That we do hereby, for us, our heirs and successors, give and grant full power and authority to the said trustees and their successors, . . . . to constitute and appoint a Provost and Vice-Provost of the said college and academy, who shall be severally named and styled Provost and Vice-Provost of the same. And also to nominate and appoint professors in all the liberal arts and sciences, the ancient languages and

the English tongue, which Provost, Vice-Provost, and Professors, so constituted and appointed, shall be known and distinguished as one body and faculty, by the name of *The Provost, Vice-Provost, and Professors of the College and Academy of Philadelphia, in the Province of Pennsylvania;* and by that name shall be capable of exercising such powers and authorities as the said trustees and their successors shall think necessary to delegate to them, for the discipline and government of the said college, academy, and charitable school: *Provided always,* That the said trustees, the Provost and Vice-Provost, and each Professor, before they shall exercise their several and respective powers or authorities, offices, and duties, do and shall take and subscribe the three first written oaths appointed to be taken and subscribed, in and by one act of Parliament, passed in the first year of the reign of our late sovereign lord, George the first, intituled, An Act for the further security of his Majesty's Person and Government; and the Succession of the Crown in the Heirs of the late Princess Sophia, being protestants, and for extinguishing the hopes of the pretended Prince of Wales, and his open and secret abettors; and shall also make and subscribe the declaration appointed to be made and subscribed by one other act of parliament, passed in the twenty-fifth year of the reign of king Charles the second, intituled, An Act for preventing dangers which may happen, etc. . . . . excepting only the people called Quakers, who, upon taking, making, and subscribing the affirmations and declarations appointed to be taken, made, and subscribed, by the acts of General Assembly of the province of Pennsylvania, to qualify them for the exercise of civil offices, shall be admitted to the exercise of all and every the powers, authorities, offices, and duties above mentioned, any thing in this provision to the contrary notwithstanding. . . . . *And we do hereby,* at the desire and request of the said trustees, constitute and appoint the Reverend William Smith, M. A., to be the first and present Provost of the said college and academy, and the Reverend Francis Allison, M. A., to be the first and present Vice-Provost of the same. . . . . *And we do further, for us, our heirs and successors, give and grant to the trustees of the said college and academy,* That for animating and encouraging the students thereof to a laudable diligence, industry, and progress in useful literature and science, they and their successors, met together on such day or days as they shall appoint for that purpose, shall have full power and authority, by the provost, . . . . to admit any of the students within the said college and academy, or any other person or persons meriting the same, to any degree or

degrees, in any of the faculties, arts, and sciences, to which persons are usually admitted, in any or either of the universities or colleges in the kingdom of Great Britain. . . . . *Provided always*, and it is hereby declared to be our true meaning and express will, That no student or students, within the said college and academy, shall ever, or at any time or times hereafter, be admitted to any degree or degrees, until such student or students have been first recommended and presented as worthy of the same, by a written mandate, given under the hands of at least thirteen of the trustees of the said college and academy. . . . .

"In testimony whereof, we have caused these our letters to be made patent, and the great seal of our said province to be hereunto affixed . . . this fourteenth day of May, in the twenty-eighth year of the reign of our sovereign lord, George the second, king of Great Britain, France, and Ireland, etc., and in the year of our Lord, one thousand seven hundred and fifty-five."

The First Commencement was held May 17, 1757, when Paul Jackson, Jacob Duché, Francis Hopkinson, Samuel Magaw, Hugh Williamson, James Latta, and John Morgan received the Degree of Bachelor of Arts. In the agitated times that followed, during the wars with the French, the Provost, Mr. Smith, opposed so vehemently the non-resistance policy of the legislature of Pennsylvania, that by an arbitrary stretch of power he was thrown into prison. In faithfulness to his duties as Provost, however, he received his classes in gaol, and continued his instructions to them there while still a prisoner. Finally he was set at liberty, for the purpose of going to England to make a personal appeal to the king, and his kindly reception there was not lessened by the strain to which his loyalty at home had been put. Oxford conferred on him the Degree of Doctor of Divinity. On his return home so highly did his fellow-citizens rate his influence abroad, that when in 1761 the Trustees were hard bestead, they sent him back to England to raise funds for an endowment. It happened that King's College (now Columbia) in New York was in similar straits, and had resolved on similar efforts. The two commissioners met in England and amicably resolved to "divide the land between them" and share the proceeds. Through the influence of the Archbishop of Canterbury they received a circular letter from the king to all the churches, and succeeded in raising a very considerable endowment for each college.

On Dr. Smith's return, as it appears on the minutes of the 14th of June, 1764, a letter was received from the Archbishop of Canterbury, Thomas and Richard Penn, and the Rev. Samuel Chandler,

D. D., addressed to the trustees, in which the trustees are congratulated on the success of Dr. Smith's, the Provost's, collection in England, and advised of what would be further necessary to the due improvement of the collection and the future prosperity of the institution. "That the institution was originally founded and carried on for the general benefit of a mixed body of people—that on the king's brief it is represented as a seminary that would be of great use for securing capable instructors and teachers, as well for the service of the society for propagating the gospel in foreign parts, as for other protestant denominations in the colonies.—That at the time of making the collection, the provost was a clergyman of the Church of England—the vice-provost, a Presbyterian—a principal professor, a Baptist, with other useful professors and tutors, all carrying on the education of youth with great harmony, and people of various denominations have heretofore contributed liberally and fully.—That jealousies had arisen lest the foundation should be narrowed, and some party exclude the rest, or put them on a worse footing than they have been or were at the time of the collection, which would be unjust and productive of contentions unfriendly to religion." It was therefore recommended to the trustees, by the writers of the letter (who had a principal share in procuring the collection), to make a fundamental rule or declaration, to prevent inconvenience of this kind, and in doing which, they were advised that the more closely they kept in view the plan on which the seminary was at the time of the royal brief, and on which it was carried on from the beginning, so much the less cause would any party have to dissatisfied.

A committee having been appointed to frame a fundamental *Resolve* or declaration, in consequence of the letter, the following was reported and adopted:

"The trustees being ever desirous to promote the peace and prosperity of this seminary, and to give satisfaction to all its worthy benefactors, have taken the above letter into their serious consideration, and perfectly approving the sentiments therein contained, do order the same to be inserted in their books, that it may remain perpetually *declaratory* of the present *wide* and excellent plan of this institution, which hath not only met with the approbation of the great and worthy personages above mentioned, but even the royal patronage of his majesty himself. They further *declare* that they will keep this plan closely in their view, and use their *utmost endeavors* that the same be *not narrowed*, nor the members of the church of England, or those dissenting from them (*in any future*

*election to the principal offices mentioned in the aforesaid letter,) be put on any worse footing in this seminary, than they were at the time of obtaining the royal brief.* They subscribe this with their names, and ordain that the same be read and subscribed by every new trustee that shall hereafter be elected, before he takes his seat at the board."

Perhaps no more striking instance can be given of the distortion to which men's minds were subject in those days of political commotion, than the fact that in 1779 this resolution was construed by the Legislature into a "narrowing of the foundation," and seized as a pretext for confiscating all the rights and properties of the College, which were bestowed upon a new organization called in its charter the "Trustees of the University of the State of Pennsylvania." Ten years later, these rights and properties were all restored, and in 1791 an act was passed amalgamating the old College with the new University, as follows:

WHEREAS, the trustees of the University of the State of Pennsylvania, and the trustees of the College, Academy, and Charitable School of Philadelphia, in the commonwealth of Pennsylvania, by their several petitions have set forth, that they have agreed to certain terms of union of the said two institutions, which are as follows:

*First:* That the name of the institution be "*The University of Pennsylvania,*" and that it be stationed in the city of Philadelphia.

*Second:* That each of the two boards shall elect, from among themselves, twelve persons, who, with the governor for the time being, shall constitute the board of trustees of the University of Pennsylvania; and that the governor shall be president.

\* \* \* \* \*

And the said trustees by their several petitions have prayed, that a law may be passed to enable them to carry the said terms of union into effect, and to incorporate them in one body, according to the purpose and intention expressed in the said terms of union.

Sec. 1. *Be it therefore enacted by the Senate and House of Representatives of the commonwealth of Pennsylvania in general assembly met, and it is hereby enacted by the authority of the same,* That, in pursuance of the second article of the said terms of union, the trustees of the University shall elect twelve persons from among themselves to be trustees of the said University after the union, and shall cer-

tify the names of the said twelve persons, so elected, to the governor of this commonwealth, on or before the first day of December next; and that the trustees of the said College, Academy, and Charitable School, shall elect twelve persons from among themselves, to be trustees of the said University, after the union, and shall certify the names of the said twelve persons, so elected, to the governor of this commonwealth, on or before the first day of December next.

Sec. 2. *And be it further enacted by the authority aforesaid,* That from and after such certificates of the elections being so made to the governor, as aforesaid, the said twenty-four persons so elected and certified, together with the governor for the time being, who shall always be president, and their successors duly elected and appointed as herein and by the said terms of union is directed, be, and they are hereby made and constituted a corporation and body politic, in law and in fact, to have continuance forever by the aforesaid name, style, and title of "The Trustees of the University of Pennsylvania," and that the said University shall at all times be stationed in the city of Philadelphia.

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For the guidance of those who may desire—during life, or by testamentary bequest—to make benefactions to the University, the following information is given:

- (1) The corporate name is: THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA.
- (2) The sum of \$100,000 is the amount necessary to found a full Professorship in any one of the Departments. This Catalogue gives the names of all those who hold full Professorships in the College and Professional Schools. The principal is invested and the income alone used, and the donor has the privilege of naming the Professorship.
- (3) The sum of \$50,000 is the cost of a dormitory house; the contributor having the privilege of naming the house. There can be no more substantial or beneficent memorials than such additions to the University's beautiful, but incomplete, dormitory system.
- (4) The sum of \$10,000 is the principal sum to establish a Fellowship in any one of the Departments; the income being paid to the Fellow, who devotes his time to original work

## UNIVERSITY OF PENNSYLVANIA.

and study; with the privilege of a very moderate amount of teaching work, under the permission of the Dean of the Department.

(5) The sum of \$5,000 endows a Free Scholarship in the College, or in any one of the Professional Schools. The income of this sum remits tuition fees, and the donor has the right, during life, to nominate to the Scholarship, subject to all the rules of the University.

(6) A like sum (\$5,000) endows a Free Bed in the Hospital of the University; and

(7) The sum of \$10,000 endows a Private Room in the Hospital.

The Provost of the University will be glad to give full information upon any question relating to Foundations, as above stated, to any person or persons who may desire more detailed knowledge.

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The University of Pennsylvania comprehends the following departments:

THE COLLEGE, including

THE SCHOOL OF ARTS.

THE TOWNE SCIENTIFIC SCHOOL.

THE WHARTON SCHOOL OF FINANCE AND COMMERCE.

THE SATURDAY COURSES FOR TEACHERS.

THE SUMMER SCHOOL.

THE COLLEGE COURSES FOR TEACHERS.

THE GRADUATE SCHOOL.

THE DEPARTMENT OF LAW.

THE DEPARTMENT OF MEDICINE.

THE DEPARTMENT OF DENTISTRY.

THE DEPARTMENT OF VETERINARY MEDICINE.

THE UNIVERSITY HOSPITAL.

THE WISTAR INSTITUTE OF ANATOMY AND BIOLOGY.

THE LABORATORY OF HYGIENE.

THE VETERINARY HOSPITAL.

THE UNIVERSITY LIBRARY.

THE DEPARTMENT OF ARCHAEOLOGY.

THE FLOWER ASTRONOMICAL OBSERVATORY.

THE DEPARTMENT OF PHYSICAL EDUCATION.

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**CHARLES CUSTIS HARRISON, LL. D.,**  
*President pro tempore of the Trustees.*

**VICE-PROVOST :**

**EDGAR FAHS SMITH, PH. D., SC. D., LL. D.**

**CORPORATION.**

**THE TRUSTEES OF THE UNIVERSITY OF  
PENNSYLVANIA.**

**THE GOVERNOR OF PENNSYLVANIA:** President  
*ex-officio.*

**ELECTED.**

- 1873. RICHARD WOOD.
- 1875. SILAS WEIR MITCHELL, M. D., LL. D. (Edin.).
- 1876. CHARLES CUSTIS HARRISON, LL. D.
- 1880. WHARTON BARKER.
- 1881. SAMUEL DICKSON, LL.D.
- 1886. HON. SAMUEL WHITAKER PENNYPACKER, LL. D
- 1887. RT. REV. OZI WILLIAM WHITAKER, D. D., LL. D.
- 1889. JOSEPH SMITH HARRIS, SC. D.
- 1891. WALTER GEORGE SMITH.
- 1896. MORRIS JAMES LEWIS, M. D.
- 1896. JOSEPH GEORGE ROSENGARTEN, LL. D.
- 1896. RANDAL MORGAN.
- 1898. SAMUEL FREDERIC HOUSTON.
- 1901. JOSEPH LEVERING JONES.
- 1903. ROBERT GRIER LE CONTE, M. D.
- 1903. CHARLES STUART WOOD PACKARD.
- 1903. JOSHUA BERTRAM LIPPINCOTT.

**ELECTED.**

1905. WHARTON SINKLER, M. D.  
 1905. ARTHUR LATHAM CHURCH.  
 1906. JOSEPH BREVITT TOWNSEND, JR.  
 1906. GEORGE HARRISON FRAZIER.  
 1906. HENRY GALBRAITH WARD.

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**ON THE LIBRARY:**

MR. ROSENGARTEN ..... 1704 Walnut Street.

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MR. JONES ..... Land Title Building.

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MR. DICKSON ..... Bullitt Building.

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**ON THE DEPARTMENT OF ARCHAEOLOGY:**

MR. HOUSTON ..... Real Estate Trust Building.

**ON THE UNIVERSITY:**

**THE PROVOST** ..... 400 Chestnut Street.

[Composed of the Chairmen of all Standing Committees.]

## **ADMINISTRATIVE OFFICERS.**

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### **OF THE CORPORATION.**

**The General Offices are on the third floor of 400 Chestnut Street.**

**Provost**—CHARLES C. HARRISON, LL. D.  
General Offices, 400 Chestnut Street.

**Vice-Provost**—EDGAR F. SMITH, PH. D., Sc. D., LL. D.  
Office in the JOHN HARRISON Laboratory of Chemistry, Thirty-fourth and Spruce Streets. Office hours, 8 A. M. to 6 P. M.  
Saturdays, 8 A. M. to 1 P. M.

**Secretary**—

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**Assistant Secretary**—EDWARD ROBINS.  
Office, 101 College Hall. Office hours, 9.30 A. M. to 4.30 P. M.  
Saturdays, 9.30 A. M. to 1 P. M.

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General Offices, 400 Chestnut Street.

**Assistant Treasurer**—HENRY R. LAWRENCE.  
General Offices, 400 Chestnut Street.

**Bursar**—WILLIAM O. MILLER, A. B.  
Office, 102 College Hall. Office hours, 9 A. M. to 1 P. M., daily.  
The Bursar's office is open from 8.45 A. M. to 5 P. M. Saturdays, 8.45 A. M. to 1 P. M.

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Office, 103 College Hall, Woodland Avenue. Office hours,  
9 A. M. to 12 M., daily.

**Dean of the Graduate School Faculty**—HERMAN V. AMES, PH. D.  
Office, 105 College Hall, Woodland Avenue. Office hours,  
9 A. M. to 1 P. M., daily.

*Dean of the Law Faculty*—W.M. DRAPER LEWIS, LL. B., PH. D.  
Office in the Law Department Building, Thirty-fourth and  
Chestnut Streets. Office hours, 12 A. M. to 1 P. M., daily.

*Dean of the Medical Faculty*—CHARLES H. FRAZIER, A. B., M. D.  
The Dean's Office (in the New Medical Laboratories, Hamilton  
Walk) is open from 9 A. M. to 5 P. M.; Saturdays, 9 A. M.  
to 1 P. M.

*Dean of the Dental Faculty*—EDWARD C. KIRK, D. D. S., Sc. D.  
Office, Dental Hall, Thirty-fourth and Locust Streets. Office  
hours, 9 A. M. to 1 P. M., daily.

*Dean of the Faculty of Veterinary Medicine*—LEONARD PEARSON,  
B. S., V. M. D., M. D.  
Office, New Veterinary Building, Thirty-ninth Street and  
Woodland Avenue. Office hours, 8.30 A. M. to 12 M., daily.

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Office in the Gymnasium, Thirty-third and Spruce Streets.  
Office hours, 3 P. M. to 6 P. M., daily, except Saturdays.

*Physician*—RUFUS B. SCARLETT, M. D., 4005 Chestnut St.  
Office hours daily, from 8 to 9 A. M., 12 to 1 P. M., and from  
7 to 8 P. M. Sundays until 10 A. M. Telephone connection.  
Other hours by appointment.

*Ophthalmologist*—WILLIAM CAMPBELL POSEY, A. B., M. D., 2049  
Chestnut Street.  
Office hours, from 8.30 A. M. to 1 P. M., daily. Telephone con-  
nection.

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#### OF OTHER DEPARTMENTS.

*Librarian of the University*—MORRIS JASTROW, JR., PH. D.  
Office in the Library, Thirty-fourth Street below Walnut. Office  
hours, 10 A. M. to 1 P. M., daily.

The Library is open daily during term-time, except Sundays  
and holidays, from 8.30 A. M. to 10 P. M. During the sum-  
mer vacation, from 9 A. M. to 5 P. M.; during the session of  
the Summer School, from 8.30 A. M. to 5 P. M.

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*Assistant Librarian of the University*—KATHARINE STOCKTON LEIPPER.

Office in the Library. Office hours, 2 P. M. to 5 P. M., daily.

*Librarian of the Biddle Law Library*—MRS. MARGARET C. KLINGELSMITH, LL. B.

Office in the Law Department Building, Thirty-fourth and Chestnut Streets. Office hours, 10 A. M. to 5 P. M., daily.

*Manager of the Bureau of Publicity*—GEORGE E. NITZSCHE, LL. B. Office in Houston Hall (third floor), Spruce Street above Thirty-fourth. Office hours, 9 A. M. to 6 P. M., daily.

*Superintendent of the University Hospital*—MARION E. SMITH.

The Hospital is on Spruce Street above Thirty-fourth. Communications concerning the business of the Hospital and the admission of patients should be addressed to the Superintendent.

*Director of the William Pepper Clinical Laboratory*—ALFRED STENGEL, M. D.

Office in the Laboratory. Office hours, 2 P. M. to 3 P. M., daily.

The Laboratory is on Spruce Street below Thirty-sixth, adjoining the Hospital.

*Director of the Wistar Institute*—MILTON J. GREENMAN, PH. B., M.D.

Office in the Institute, Thirty-sixth Street and Woodland Avenue. Office hours, from 9 A. M. to 12 M., daily, except Saturdays.

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(For office and office hours, see under *Vice-Provost*.)

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Office in the Laboratory, Thirty-fourth Street below Walnut.

*First Assistant in the Laboratory of Hygiene*—DAVID HENDRICKS BERGERY, A. M., M. D.

Office in the Laboratory. Office hours, 9 A. M. to 12 M., and 2 P. M. to 5 P. M., daily.

*Director of the Randal Morgan Laboratory of Physics*—ARTHUR W. GOODSPPEED, PH. D.

Office in the Laboratory, Thirty-fourth Street below Walnut.

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Office in the Central Light and Heat Station, Thirty-fourth and Spruce Streets, after 8.30 A. M.

*Director of the Botanic Garden*—JOHN M. MACFARLANE, D. Sc.

The Botanic Garden is adjacent to Biological Hall, on Hamilton Walk, and is open daily from 7 A. M. to sunset. The greenhouses are open from 8 A. M. to 5 P. M.

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The Observatory is situated on the West Chester Pike, one and three-fourths miles beyond the city limits. (Take elevated cars on Market Street to Sixty-ninth Street, then change to Ardmore or Newtown Square car.) The residence of the Director is adjacent to the Observatory.

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Office, Logan Hall, Thirty-sixth Street below Woodland Avenue. Office hours, 11 A. M. to 1 P. M., daily.

*Director of the Summer School*—ALBERT DUNCAN YOCUM, PH. D. Office, College Hall. Office hours, 2.30 P. M. to 4.30 P. M., daily, except Saturday.

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## UNIVERSITY MUSEUM.

The Museum contains the archaeological and ethnological collections of the University, and is situated on Spruce Street below Thirty-fourth, opposite Franklin Field. The collections are open to visitors daily, during the scholastic year, New Year's Day, Good Friday and Christmas Day excepted, from 10 A. M. to 5 P. M.; on Sundays, from 2 P. M. to 6 P. M.

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Professor of American History.

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Professor of Physiology.

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\* Arranged in order of accession to office. A list of all officers, arranged alphabetically, and containing residence and mail addresses, will be found at the end of the Catalogue.

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JOHN WELSH CENTENNIAL Professor of History and English  
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THOMAS A. SCOTT Professor of Mathematics.

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Clinical Professor of Diseases of the Ear.

**JOHN PRICE CROZER GRIFFITH, M. D.,**  
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Professor of English Literature, and Dean of the College  
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**GEORGE GRENVILLE MILLIKEN, M. D., D. D. S.,**  
Assistant Professor of Operative Technics.

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\* Absent on Public Business.

**ALFRED STENGEL, M. D.,**

Professor of Clinical Medicine, and Director of the WILLIAM PEPPER Laboratory of Clinical Medicine.

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PHYSICS.—Professor GOODSPEED.  
CHEMISTRY.—Professor SMITH.  
BIOLOGY.—Professor MACFARLANE.  
ARCHITECTURE.—Professor LAIRD.  
MECHANICAL ENGINEERING.—Professor SPANGLER.  
CIVIL ENGINEERING.—Professor MARBURG.

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## FACULTY STANDING COMMITTEES.

1908-09.

1. ON SCHOOLS AND ENTRANCE REQUIREMENTS.—Professor CRAWLEY, *Chairman*, Professor EASBY, Assistant Professor EHLDERS, Assistant Professor HOWLAND, Professor JOHNSON, Assistant Professor OSBORNE, Professor WEYGANDT, Assistant Professor SHINN.
2. ON THE ADMISSION OF SPECIAL AND PARTIAL STUDENTS.—Assistant Professor EVANS, *Chairman*, Professor LAIRD, Professor MACFARLANE, Professor BROWN, Professor YOUNG.
3. ON ADVANCED STANDING AND ON SPECIAL AND PARTIAL STUDENTS.—Professor FISHER, *Chairman*, Professor SHUMWAY, Assistant Professor STANFORD, Professor ROLFE, Dr. CRAWFORD.
4. EXECUTIVE COMMITTEE.—The DEAN, *Chairman*, Professor LAMBERTON, Professor GOODSPEED.
5. ON STUDENTS' RESIDENCES.—Assistant Professor TAGGART, *Chairman*, Assistant Professor HARSHBERGER, Assistant Professor SAFFORD, Mr. WATSON, Assistant Professor TWITMYER.

6. ON ATHLETIC ORGANIZATIONS.—Professor E. F. SMITH.
7. ON NON-ATHLETIC ORGANIZATIONS.—Professor LINGELBACH.
8. ON ROSTER.—Assistant Professor HALLETT, *Chairman*, Professor QUINN, Professor LAIRD, Assistant Professor INGRAM, Mr. NEARING, Assistant Professor STANFORD, Assistant Professor CALVERT, Assistant Professor SHINN, Assistant Professor RICHARDS, Dr. CRAWFORD, Dr. DAVIS.
9. ON LIBRARY.—Professor LAMBERTON, *Chairman*, Professor SPANGLER, Professor WITMER, Professor C. L. DOOLITTLE, Professor ROLFE.
10. ON SCHOLARSHIPS.—Professor E. F. SMITH, *Chairman*, Professor CHEYNEY, Professor PATTEN.
11. ON SATURDAY COURSES FOR TEACHERS.—Professor SCHELLING, *Chairman*, Professor WITMER, Assistant Professor Mc DANIEL, Assistant Professor YOCUM.
12. ON NOMINATIONS.—The DEAN, *Chairman*, Professor MARBURG, Professor LEARNED, Professor McMaster, Professor PATTEN, Professor LAMBERTON.
13. ON SUMMER SCHOOL.—Assistant Professor YOCUM, *Chairman*, Assistant Professor HOWLAND, Assistant Professor SHINN, Assistant Professor TWITMYER, Mr. SHELLY.

## DIVISIONS OF THE COLLEGE.

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The College Faculty conducts the following courses:

### I.—(IN THE SCHOOL OF ARTS.)

1. The Course in Arts and Science.
2. The Courses in Biology.\*
3. The Course in Music.\*

### II.—(IN THE TOWNE SCIENTIFIC SCHOOL.)

1. The Courses in Architecture.
2. The Courses in Mechanical and in Electrical Engineering.
3. The Course in Civil Engineering.
4. The Course in Chemistry.
5. The Course in Chemical Engineering.

### III.—(IN THE WHARTON SCHOOL OF FINANCE AND COMMERCE.)

1. The Course in Finance and Commerce.
2. The Evening School of Accounts and Finance.

### IV.—THE SATURDAY COURSES FOR TEACHERS.\*

### V.—THE SUMMER SCHOOL COURSES.\*

### VI.—THE COLLEGE COURSES FOR TEACHERS.\*

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#### I.—COURSES IN THE SCHOOL OF ARTS.

1. *The Course in Arts and Science.*—This course leads to the degree of Bachelor of Arts or Bachelor of Science, according to the languages studied. Those students who present Latin and Greek for admission, and who take in College Greek 331, and Latin 431 and 432, receive the degree of Bachelor of Arts; other students receive the degree of Bachelor of Science.

2. *The Course in Biology.*—This course embraces a certain amount of required work in biological studies, and in English, Mathematics, Languages, Physics, Chemistry, etc. In the latter portion of the course the elective principle is active. Graduates receive the degree of Bachelor of Science in Biology.

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\* Open to both men and women.

2a. *A Special Course in Biology.*—This course extends over two years, and embraces principally studies in Botany, Zoölogy and Anatomy. It leads to a certificate of proficiency.

3. *The Course in Music.*—This course extends over four years and leads to a certificate of proficiency. Those who obtain such certificate may proceed after further study to the degree of Bachelor of Music. *The course is open to special students only.*

## II.—COURSES IN THE TOWNE SCIENTIFIC SCHOOL.

*Candidates intending to take any one of the technical courses in the College are strongly recommended to devote, if possible, at least one year to general studies, before taking up their technical work.*

(a) *If the candidate presents for admission the requirements for the course in Arts and Science, he enters that course for one or more years, during which period he takes the additional Mathematics and Physics required for admission to the technical courses, and pursues such other studies as he may elect.* Only those students, however, who have studied Plane Trigonometry prior to entering College, may take Physics as a part of the course in the first year. Students intending to take only one year in the course in Arts and Science before entering a technical course are advised, therefore, to offer Physics for admission, if possible, in addition to the regular entrance requirements to the course in Arts and Science, if such students have not previously taken Plane Trigonometry.

(b) *If the candidate presents for admission the requirements for the technical courses, and wishes to spend a year in general studies, it is suggested that he take, in the course in Arts and Science, the following subjects:*

History .....	four hours a week.
Economics .....	two hours a week.
Foreign Languages (2) . . .	about six hours (three in each).
English .....	three hours a week.
Public Speaking .....	one hour a week.
Accounting .....	three hours a week.

*It is not intended that the list of studies here outlined shall be prescribed, in the sense that no variations will be permitted.*

1. *The Course in Architecture.*—This course is devoted principally to technical studies in Architecture, and leads to the degree

of Bachelor of Science in Architecture; there is no fixed time for its completion, but average students may obtain the degree in four years. By a prescribed combination of subjects in this course with those offered in the course in Arts and Science, a candidate for the A. B. degree may obtain also the Bachelor's degree in Architecture by devoting six years of work to both courses.

1. *A Special Course in Architecture.*—This course extends over two years, and embraces technical studies in Architecture. It leads to a certificate of proficiency.

2. *The Course in Mechanical Engineering.*—This course extends over four years, devoted principally to technical studies in Mechanical Engineering, and leads to the degree of Bachelor of Science in Mechanical Engineering.

3. *The Course in Electrical Engineering.*—This course extends over four years, devoted principally to technical studies in Electrical Engineering, and leads to the degree of Bachelor of Science in Electrical Engineering.

4. *The Course in Civil Engineering.*—This course extends over four years, devoted principally to technical studies in Civil Engineering, and leads to the degree of Bachelor of Science in Civil Engineering.

5. *The Course in Chemistry.*—This course extends over four years, devoted principally to studies in theoretical and practical Chemistry. It leads to the degree of Bachelor of Science in Chemistry.

6. *The Course in Chemical Engineering.*—This course extends over four years, and embraces technical studies selected from the courses in Chemistry and Mechanical Engineering. It leads to the degree of Bachelor of Science in Chemical Engineering.

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### III.—COURSES IN THE WHARTON SCHOOL OF FINANCE AND COMMERCE.

1. *The Course in Finance and Commerce.*—This course embraces studies in Economics, Political and Social Science, Business Law, Banking and Finance, History, English Language, etc. The work is designed to equip students for definite careers in business, the study of law, the public service, social work and teaching. Graduates receive the degree of Bachelor of Science in Economics.

1a. *A Special Course in Business Practice and Banking.*—This course extends over two years, and leads to a certificate of proficiency.

2. *The Evening School of Accounts and Finance.*—This course of three years, four evenings in each week, is intended for those who are prevented by business occupations during the day from taking regular college work. For the current year the work consists of studies in Business Law, Accounting, Finance and Industrial Management.

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#### IV.—THE SATURDAY COURSES FOR TEACHERS.

These courses are specially arranged to meet the needs of teachers who wish to pursue work in one or more subjects. The classes meet on Saturdays at hours convenient to the students who attend them. They lead to no degree, but a certificate of study is awarded upon the satisfactory completion of any course. The Saturday Courses for Teachers are open to both men and women.

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#### V.—THE SUMMER SCHOOL COURSES.

During the summer of 1908 the College Faculty offered courses of instruction in the following subjects: Chemistry, English, French, Geology, German, Greek, History, Latin, Mathematics, Mineralogy, Music, Pedagogy, Philosophy, Physics, Psychology and Spanish. Similar courses will be given during the summer of 1909.

Students who pursue Summer School courses with satisfaction to the instructors, and pass the assigned examinations, receive certificates of study. No entrance examinations are required, and all courses are open to both men and women.

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#### VI.—COLLEGE COURSES FOR TEACHERS

Leading to the Degrees of Bachelor of Arts and Bachelor of Science.

These courses, while intended primarily for teachers and given in the afternoons, evenings and Saturdays at hours convenient for persons engaged in teaching, are open to all persons who may fulfil the requirements for admission either as regular or as partial students. They are under the general regulations, as to admission and courses, which govern the Arts and Science course.

## ADMISSION TO COLLEGE.

Candidates for admission to the Freshman Class in the College may satisfy the scholastic requirements for admission either (1) by passing the entrance examinations, or (2) by being able to show by the *record of their work in school* that they have covered these requirements in a manner satisfactory to the Committee on Admission.

Every candidate for admission is also required to furnish a testimonial of honorable dismissal from the school or college which he last attended, or from the tutor with whom he has studied. He must also refer to two persons, preferably his teachers or employers, from whom information may be obtained. Testimonials and references must be sent to the Dean not later than the first day of the entrance examinations in June and September (June 17 and September 16, respectively, in 1909).

**I. ADMISSION BY EXAMINATION.**—Candidates may attend either the examinations conducted by the University in Philadelphia, and in various other cities, or the examinations of the College Entrance Examination Board. The University conducts entrance examinations in Philadelphia in January, June and September, and in various other cities in June. The time schedules of these examinations for 1909 are given on pages 77 and 78.

Candidates for admission to the College wishing to be examined away from Philadelphia are requested to communicate with the Dean as early as practicable. A list of places outside of Philadelphia at which the University of Pennsylvania will conduct examinations will be furnished on application after May 1.

**COLLEGE ENTRANCE EXAMINATION BOARD.**—The entrance examinations of the College Entrance Examination Board will be held June 14-19, 1909. Applications for examination must be addressed to the College Entrance Examination Board, Post Office Sub-Station 84, New York, N. Y., and must be made upon a form obtained from the Secretary of the Board. Applications for examination at points in the United States east of the Mississippi River must be received by the Board at least two weeks in advance of the examinations, that is, on or before Monday, May 31, 1909; applications for examinations elsewhere in the United States or in Canada must be received at least three weeks in advance of the examinations, that is, on or

before Monday, May 24, 1909; and applications for examination outside of the United States and Canada must be received at least five weeks in advance of the examinations, that is, on or before Monday, May 10, 1909. Applications received later than the dates named will be accepted when it is possible to arrange for the examination of the candidates concerned, but only upon the payment of \$5.00 in addition to the usual examination fee. The examination fee is \$5.00 for all candidates examined at points in the United States and Canada and \$15.00 for all candidates examined outside of the United States and Canada. The fee (which cannot be accepted in advance of the application) should be remitted by postal order, express order, or draft on New York to the order of the College Entrance Examination Board. A list of the places at which examinations are to be held by the Board will be published March 1. Requests that the examinations be held at particular points, to receive proper consideration, should be addressed to the Secretary of the Board not later than February 1.

The College Entrance Diploma issued by the New York State Education Department will be accepted for admission to the College for such subjects as it covers.

**PRELIMINARY EXAMINATIONS.**—Candidates may present themselves at any of the regular examinations held not more than two years and four months in advance of their admission to College for examination in any portion of the subjects required for admission to the course they propose to enter. *Every candidate for such preliminary examinations must present to the Dean of the College a certificate of preparation from the Principal of his school, or from his tutor, naming the subjects in which he is prepared, before he can be admitted to the examination. When a candidate, however, has been in regular attendance at a school or academy during the year preceding his application for admission to preliminary examination, a certificate from a private tutor will not in itself be sufficient.*

Blanks for this purpose may be obtained upon application to the Dean.

A candidate who presents himself for preliminary examinations in June may not present himself at the entrance examinations in the September following with the view of taking examinations in addition to those stated in the preliminary certificate received from his school in June. This rule, however, is not to be construed

as forbidding a candidate for admission in any year from dividing his examinations between June and September of that year, if he so desires.

**SCHEDULE OF ENTRANCE EXAMINATIONS IN PHILADELPHIA, JUNE AND SEPTEMBER, 1909.**

Thursday, June 17, and Thursday, September 16:

- 9-11 Registration of candidates.
- 9-11 Spanish.
- 11.15-1.15 English **A** and **B**.
- 2-5 History **A**, **B**, **C** and **D**. (Every candidate should be present at 2 o'clock, whether he intends to take one or more of these subjects.)

Friday, June 18, and Friday, September 17:

- 9-11 German **A**.
- 11.15-1.15 Physics **A** and **B**.
- 2-4 Mathematics **A** (i).
- 2-4 Mathematics **A** (ii).
- 2-5 Mathematics **A** (i) and (ii).

Saturday, June 19, and Saturday, September 18:

- 9-11 French **A**.
- 11.15-1.15 Mathematics **C**.
- 2-5 Latin **D**, **L** and **M**. (Every candidate should be present at 2 o'clock, whether he intends to take one or more of these subjects.)

Monday, June 21, and Monday, September 20:

- 9-11 Latin **B** and **C**.
- 11.15-12.45 Mathematics **E**.
- 11.15-1.15 Mathematics **F**.
- 2-5 Chemistry.

Tuesday, June 22, and Tuesday, September 21:

- 9-11 Greek **B** and **C**.
- 9-11 Mathematics **B**.
- 11.15-1.15 Greek **F** and **G**.
- 11.15-1.15 French **B**.
- 2-5 Zoology.

Wednesday, June 23, and Wednesday, September 22:

- 9-11 Mathematics **D**.
- 11.15-1.15 German **B**.
- 2-5 Botany.

## ENTRANCE EXAMINATIONS, JANUARY, 1909.

Monday, January 18:

4.30-6.30 Registration of candidates.  
7-9 Mathematics A (i)  
7-9 Mathematics A (ii).  
7-10 Mathematics A (i) and (ii).

Tuesday, January 19:

4.30-6.30 English A and B.  
7-10 History A, B, C and D. (Every candidate should be present at 7 o'clock, whether he intends to take one or more of these subjects.)

Wednesday, January 20:

4.30-6.30 German A.  
7-10 Latin D, L and M (Every candidate should be present at 7 o'clock, whether he intends to take one or more of these subjects.)

Thursday, January 21:

4.30-6.30 French A.  
7-10 Chemistry.

Friday, January 22:

4.30-6.30 Mathematics C.  
7-10 Zoology.

Monday, January 25:

4.30-6.30 Latin B and C.  
7-10 Botany.

Tuesday, January 26:

4.30-6.30 Greek B and C.  
4.30-6.30 Mathematics B.  
7-9 Mathematics F.

Wednesday, January 27:

4.30-6.30 German B.  
7-9 Spanish; Mathematics E.

Thursday, January 28:

4.30-6.30 Mathematics D.  
7-9 Physics A and B.

Friday, January 29:

4.30-6.30 Greek F and G.  
4.30-6.30 French B.

NOTE.—These examinations, being intended primarily for candidates for admission to the College Courses for Teachers, are set for afternoon and evening hours. They may be taken subject to regulations governing preliminary examinations by candidates who desire to enter the other courses in the College in September.

II. ADMISSION UPON SCHOOL RECORD.—Under the following regulations candidates may receive credit without examination for the entrance requirements in whole or in part. A statement of the candidate's school record, certified by the Principal of the school, is required to be sent to the Dean of the College. This statement must give full information regarding each subject, which the candidate has studied in school, in the manner called for on the blank provided for this purpose, together with the marks or grades which he has received in each subject during at least the last two years. This statement of school record is referred by the Dean to a Committee of the College Faculty which decides for each candidate for what subjects, if any, the candidate will receive credit.

To secure consideration of his school record a candidate must have completed a regular course of study (*i. e.*, not a special or partial course) in the school which he last attended, he must have attended that school for *at least one year*, he must have completed his course there not more than one year prior to the date of his application for admission to college, and the school must be one with regard to whose standing the University is satisfied. Subjects which have been studied *privately*, outside of the regular school curriculum, even if under the direction of members of the school staff, will not be considered as forming part of the school record.

The fact that candidates from a given school may have previously been admitted on their records does not establish any right to which a candidate may appeal for the acceptance of his own record. The case of each individual is decided absolutely on its own merits.

All applications for admission upon school record should be in the hands of the Dean as early as possible in June, for decision in the spring; should this, for good reasons, be impossible, then not later than September 1st. *Principals of schools will appreciate the importance of sending in the applications of candidates at as early a date as possible, when they understand that until their credentials*

*are acted upon, and the decision announced, candidates will not know in what subjects they will be required to take examinations.*

The candidate must not fail to appear at the September examinations if he has not been informed of the decision in his case before the date when the examinations begin. For this date consult the University calendar.

Schools with the results of whose work in preparing students for college the University is not familiar, must notify the Dean before May 1st in any year if they wish to have students apply for admission in that year on their school record.

## REQUIREMENTS FOR ADMISSION TO EACH COURSE

### ARTS AND SCIENCE.

Each candidate must offer subjects amounting to twenty-three (23) points, as determined by counting up the point values attached to the subjects in the following lists:

#### LIST OF SUBJECTS WHICH MAY BE OFFERED IN 1909 AND THEREAFTER FOR ADMISSION TO THE COURSE IN ARTS AND SCIENCE.

N. B.—The designations and definitions of these requirements are identical with those of the College Entrance Examination Board.

##### (I.)

Each candidate must offer English A, B, two branches of History and Mathematics A, C, amounting altogether to 10 points.

#### *English:*

A—Reading and Practice .....	2 points
B—Study and Practice .....	2 "

#### *History:*

A—Ancient History .....	1 point
B—Medieval and Modern History .....	1 "
C—English History .....	1 "
D—American History and Civil Government .....	1 "

#### *Mathematics:*

A—Elementary Algebra .....	2 points
C—Plane Geometry .....	2 "

## (III.)

Each candidate must offer two of the four languages contained in this group, and he must offer as much of the two selected as is stated here.

*Latin:*

B—Caesar, Gallic War, Bks. I-IV .....	1 point
C—Cicero, Six Orations .....	2 "
D—Vergil, <i>Aeneid</i> , Bks. I-VI .....	2 "
L—Prose Composition .....	1 "
M—Sight Translation of Prose .....	1 "

*Greek:*

B—Xenophon, <i>Anabasis</i> , Bks. I-IV .....	2 points
C—Homer, <i>Iliad</i> , Bks. I-III.....	2 "
F—Prose Composition .....	1 "
G—Sight Translation of Prose .....	1 "

*French:*

A—Elementary French .....	3 points
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*German:*

A—Elementary German .....	3 points
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Candidates who do not offer Latin and Greek in (II) which make, with the 10 points contained in (I), the required number of 23 points, must make up the required number of points by offering additional subjects. These may be selected from subjects in (I) and (II) which have not been offered otherwise, and from list (III) given below. If a candidate offer Latin or Greek as a third language, he must offer at least three points in that language.

## (III.)

French B—Intermediate French .....	2 points
German B—Intermediate German .....	2 "
Spanish .....	2 "
Mathematics B—Higher Algebra .....	1 "
Mathematics D—Solid Geometry .....	1 "
Mathematics F—Plane Trigonometry .....	1 "
Physics B .....	2 "
Chemistry .....	2 "
Botany .....	2 "
Zoology .....	2 "

**COLLEGE COURSES FOR TEACHERS.**

The requirements are the same as for the Course in Arts and Science.

**FINANCE AND COMMERCE (The Wharton School).**

Candidates must offer all the subjects contained in list I (pp. 82 to 85), and two languages as in list II (pp. 85 to 88), or they may substitute for one of the languages Mathematics D, E and Physics A (see pp. 90 and 91).

**BIOLOGY.**

Candidates must offer all the subjects contained in list I (pp. 82 to 85), and two languages as in list II (pp. 85 to 88).

**COURSE IN MUSIC.**

(See under Admission to Special and Partial Courses.)

**ARCHITECTURE.**

Candidates must offer all the subjects contained in list I (pp. 82 to 85), French A or German A (see pp. 85 to 87), Mathematics D and Physics A (pp. 90 and 91).

N. B.—It is *strongly recommended* that candidates for admission to the course in Architecture offer *French* rather than *German*.

**CHEMISTRY.****CHEMICAL ENGINEERING.****CIVIL ENGINEERING.****ELECTRICAL ENGINEERING.****MECHANICAL ENGINEERING.**

Candidates for any of these courses must offer all of the subjects contained in list I (pp. 82 to 85), French A or German A (see pp. 86 to 87), Mathematics D, E, and Physics A (see pp. 90 to 91).

**DESCRIPTION OF THE DIFFERENT SUBJECTS IN WHICH ADMISSION EXAMINATIONS ARE HELD.****I.****SUBJECTS REQUIRED OF ALL CANDIDATES.****ENGLISH.**

No candidate will be accepted in English whose work is notably defective in spelling, punctuation, idiom or division into paragraphs.

**A. (1) GRAMMAR and ANALYSIS**, as in any advanced course in English Grammar, Analysis and Composition. (2) The writing of several paragraphs, correct in spelling, punctuation, grammar and expression, written on subjects taken from the works named below, a general knowledge of which is required. The form of examination will be the writing of a paragraph or two on each of several topics chosen by the candidate from a considerable number—perhaps ten or fifteen—set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books.

For 1909, 1910, 1911:

Group I (two to be selected).

Shakespeare's *As You Like It*, *Henry V*, *Julius Cæsar*, *The Merchant of Venice*, *Twelfth Night*.

Group II (one to be selected).

Bacon's *Essays*; Bunyan's *The Pilgrim's Progress, Part I*; *The Sir Roger de Coverley Papers* in *The Spectator*; Franklin's *Autobiography*.

Group III (one to be selected)..

Chaucer's *Prologue*; Spenser's *Faerie Queene* (selections); Pope's *The Rape of the Lock*; Goldsmith's *The Deserted Village*; Palgrave's *Golden Treasury (First Series)*, Books II and III, with especial attention to Dryden, Collins, Gray, Cowper and Burns.

Group IV (two to be selected).

Goldsmith's *The Vicar of Wakefield*; Scott's *Ivanhoe*; Scott's *Quentin Durward*; Hawthorne's *The House of the Seven Gables*; Thackeray's *Henry Esmond*; Mrs. Gaskell's *Cranford*; Dickens' *A Tale of Two Cities*; George Eliot's *Silas Marner*; Blackmore's *Lorna Doone*.

Group V (two to be selected).

Irving's *Sketch Book*; Lamb's *Essays of Elia*; De Quincey's *Joan of Arc* and *The English Mail Coach*; Carlyle's *Heroes and Hero Worship*; Emerson's *Essays*; Ruskin's *Sesame and Lilies*.

Group VI (two to be selected).

Coleridge's *The Ancient Mariner*; Scott's *The Lady of the Lake*; Byron's *Maseppa* and *The Prisoner of Chillon*; Palgrave's *Golden Treasury (First Series)*, Book IV, with especial attention to Wordsworth, Keats and Shelley; Macaulay's *Lays of Ancient Rome*; Poe's *Poems*; Lowell's *The Vision of Sir Launfal*; Arnold's

*Sohrab and Rustum*; Longfellow's *The Courtship of Miles Standish*; Tennyson's *Gareth and Lynette*, *Lancelot and Elaine*, and *The Passing of Arthur*; Browning's *Cavalier Tunes*, *The Lost Leader*, *How They Brought the Good News from Ghent to Aix*, *Evelyn Hope*, *Home Thoughts from Abroad*, *Home Thoughts from the Sea*, *Incident of the French Camp*, *The Boy and the Angel*, *One Word More*, *Hervé Riel*, *Pheidippides*.

B. A special knowledge of the subject-matter, form and structure of the following works:

For 1909, 1910, 1911: Shakespeare's *Macbeth*; Milton's *Lycidas*, *Comus*, *L'Allegro*, and *Il Penseroso*; Burke's *Speech on Conciliation with America* or Washington's *Farewell Address* and Webster's *First Bunker Hill Oration*; Macaulay's *Life of Johnson*, or Carlyle's *Essay on Burns*.

Candidates who pass the examinations of the C. E. E. B. in English A and B will be given credit for English A and B.

#### HISTORY.

Each candidate is examined in two (2) of the four subjects, A, B, C, D.

Outline maps will be furnished for the questions in historical geography which will form a part of each paper.

Extra credit will be given for student note-books giving abstracts of collateral reading, notes of lectures, or digests of the text-book used. Such books should be certified by the candidate's teacher.

A. Ancient history, with special reference to Greek and Roman history, and including also a short introductory study of the more ancient nations and the chief events of the early Middle Ages, down to the death of Charlemagne (814).

B. Medieval and modern European history, from the death of Charlemagne to the present time.

C. English history, with due reference to social and political development.

D. American history. The questions will be upon the four following topics:

1. Historical geography. Questions are to be answered by drawing on an outline map certain geographical boundaries.
2. The Colonial period.
3. The Revolutionary period.
4. The Constitutional period. Under this topic will be a few questions on civil government.

Candidates who pass the examinations of the C. E. E. B. in History **A**, **B**, **C**, **D** will be given credit for the corresponding subjects above, viz: History **A**, **B**, **C**, **D**, respectively.

### MATHEMATICS.

#### **A. ELEMENTARY ALGEBRA.**

(i) *Algebra to Quadratics*.—The four fundamental operations for rational algebraic expression. Factoring, determination of highest common factor and lowest common multiple by factoring. Fractions, including complex fractions, ratio and proportion. Linear equations, both numerical and literal, containing one or more unknown quantities. Problems depending on linear equations. Radicals, including the extraction of the square root of polynomials and of numbers. Exponents, including the fractional and negative.

(ii) *Quadratics and Beyond*.—Quadratic equations, both numerical and literal. Simple cases of equations with one or more unknown quantities, that can be solved by the methods of linear or quadratic equations. Problems depending on quadratic equations. The binomial theorem for positive integral exponents. The formulas for the  $n$ th term and the sum of the terms of arithmetical and geometric progressions, with applications.

**C. PLANE GEOMETRY.** The usual theorems and constructions of good text-books, including the general properties of plane rectilinear figures; the circle, and the measurement of angles; similar polygons; areas, regular polygons, and the measurement of the circle. The solution of numerous original exercises, including loci problems. Applications to the mensuration of lines and plane surfaces.

Candidates who pass the examinations of the C. E. E. B. in Mathematics **A** (i), **A** (ii), and **C** will be given corresponding credit.

### II.

#### ANCIENT AND FOREIGN LANGUAGES (IN PART).

##### GREEK.

**NOTE.**—Questions on inflection, derivation, composition of words and on syntax will be asked under **B** and **C**.

**B. XENOPHON:** The first four books of the *Anabasis*.

**C. HOMER:** The first three books of the *Iliad* (omitting II, 484-end).

**F. PROSE COMPOSITION:** Continuous prose based upon Xenophon and other Attic prose of similar difficulty.

**G. SIGHT TRANSLATION OF PROSE** of no greater difficulty than Xenophon's *Anabasis*.

Candidates who pass the examinations of the C. E. E. B. in Greek **B, C, F, G** will be given corresponding credit.

#### LATIN.

**NOTE.**—Questions will be asked under **B, C** and **D**, on the inflection, derivation, and composition of words, on syntax, and on geography, history, and mythology.

**B. CAESAR:** Four books of the *Gallic War*, preferably the first four.

**C. CICERO:** *Six Orations*. The order of preference is indicated in the following list: The four against Catiline, those of Archias, the Manilian Law, Marcellus, Sextus Roscius, Milo, Sestius, Ligaricus, and the fourteenth Philippic.

**D. VERGIL:** The first six books of the *Aeneid*, with the scanning of the dactylic hexameter.

**M. TRANSLATION AT SIGHT:** Prose of no greater difficulty than the easier passages in Cicero's *Orations*.

**L. PROSE COMPOSITION:** The translation into Latin of continuous English prose based upon passages of moderate difficulty in Caesar or Cicero.

Candidates who pass the examinations of the C. E. E. B. in Latin **B, C, D, L, M** will be given corresponding credit.

#### FRENCH.

**A. ELEMENTARY FRENCH.**—Preparation for this examination should comprise (1) careful drill in pronunciation; (2) the rudiments of grammar, including the inflection of the regular and the more common irregular verbs, the plural nouns, the inflection of adjectives, participles, and pronouns; the use of personal pronouns, common adverbs, prepositions, and conjunctions; the order of words in the sentence, and the elementary rules of syntax; (3) abundant easy exercises, designed not only to fix in the memory the forms and principles of grammar, but also to cultivate readiness in the reproduction of natural forms of expres-

sion; (4) the reading of from 100 to 175 duodecimo pages of graduated texts, with constant practice in translating into French easy variations of the sentences read (the teacher giving the English), and in reproducing from memory sentences previously read; (5) writing French from dictation.

During the second year the work should comprise (1) the reading of from 250 to 400 pages of easy modern prose in the form of stories, plays, or historical or biographical sketches; (2) constant practice, as in the previous year, in translating into French easy variations upon the texts read; (3) frequent abstracts, sometimes oral and sometimes written, of portions of the text already read; (4) writing French from dictation; (5) continued drill upon the rudiments of grammar, with constant application in the construction of sentences; (6) mastery of the forms and use of pronouns, prenominal adjectives, of all but the rare irregular verb forms, and of the simpler uses of the conditional and subjunctive.

Suitable texts for the second year are: About's *Le roi des montagnes*, Bruno's *Le tour de la France*, Daudet's easier short tales, La Bédollière's *Le Mère Michel et son chat*, Erckmann-Chatrian's stories, Foa's *Contes biographiques* and *Le petit Robinson de Paris*; Foncin's *Le pays de France*, Labiche and Martin's *La poudre aux yeux* and *Le voyage de M. Perrichon*, Legouvé and Labiche's *La cigale chez les fourmis*, Malot's *Sans famille*, Mairet's *La tâche du petit Pierre*, Mérimée's *Colomba*, extracts from Michelet, Sarcey's *Le siège de Paris*, Verne's stories.

Candidates who pass the examinations of the C. E. E. B. in French A will be given corresponding credit.

#### GERMAN.

**A. ELEMENTARY GERMAN.**—The preparation for this examination should comprise: (1) Careful drill upon pronunciation; (2) the memorizing and frequent repetition of easy colloquial sentences; (3) drill upon the rudiments of grammar, that is, upon the inflection of the articles, of such nouns as belong to the language of every-day life, of adjectives, pronouns, weak verbs, and the more usual strong verbs; also upon the use of the more common prepositions, the simpler uses of the modal auxiliaries, and the elementary rules of syntax and word-order; (4) abundant easy exercises designed not only to fix in mind the forms and principles of grammar, but also to cultivate readiness in the reproduction of natural forms of expression; (5) the reading of

from 75 to 100 pages of graduated texts from a reader, with constant practice in translating into German easy variations upon sentences selected from the reading lesson (the teacher giving the English), and in the reproduction from memory of sentences previously read.

During the second year the work should comprise: (1) The reading of from 150 to 200 pages of literature in the form of easy stories and plays; (2) accompanying practice, as before, in the translation into German of easy variations upon the matter read and also in the off-hand reproduction, sometimes orally and sometimes in writing, of the substance of short and easy selected passages; (3) continued drill upon the rudiments of the grammar, directed to the ends of enabling the pupil, first, to use his knowledge with facility in the formation of sentences, and, secondly, to state his knowledge correctly in the technical language of grammar.

The following reading recommended in the report of the Committee of Twelve will furnish matter from which selections may be made by the teacher: Andersen's *Märchen* and *Bilderbuch ohne Bilder*; Arnold's *Fritz auf Ferien*; Baumbach's *Die Nonna und Der Schwiegersohn*; Gerstäcker's *Germelshausen*; Heyse's *L'Arrabbiata*, *Das Mädchen von Treppi*, and *Anfang und Ende*; Hillern's *Höher als die Kirche*; Jensen's *Die braune Erica*; Leander's *Träumereien*, and *Kleine Geschichten*; Seidel's *Märchen*; Stökl's *Under dem Christbaum*; Storm's *Immensee* and *Geschichten aus der Tonne*; Zschokke's *Der zerbrochene Krug*; Hauff's *Das kalte Herz*. Among shorter plays the best available are perhaps Benedict's *Der Prozess*, *Der Weiberfeind*, and *Günstige Vorzeichen*; Elz's *Er ist nicht eifersüchtig*; Wichert's *An der Majorsecke*; Wilhelmi's *Einer muss heiraten*.

Candidates who pass the examinations of the C. E. E. B. in German A will be given corresponding credit.

### III.

#### FOREIGN LANGUAGE, ADVANCED MATHEMATICS AND SCIENCE.

##### FRENCH.

**B. INTERMEDIATE FRENCH.\***—Preparation for this examination should comprise the reading of from 400 to 600 pages of French

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\* For the requirement in Elementary French (French A) see p. 86.

of ordinary difficulty, a portion to be in the dramatic form; constant practice in giving French paraphrases, abstracts or reproductions from memory of selected portions of the matter read; the study of a grammar of modern completeness; writing from dictation.

Suitable texts are: About's stories, Augier and Sandeau's *Le gendre de M. Poirier*, Béranger's poems, Corneille's *Le Cid* and *Horace*, Coppée's poems, Daudet's *La Belle-Nivernaise*, La Brète's *Mon oncle et mon curé*, Madame de Sévigné's letters, Hugo's *Hernani* and *La chute*, Labiche's plays, Loti's *Pêcheur d'Islande*, Mignet's historical writings, Molière's *L'avare* and *Le bourgeois gentilhomme*, Racine's *Athalie*, *Andromaque* and *Esther*, George Sand's plays and stories, Sandeau's *Mademoiselle de la Seiglière*, Scribe's plays, Thierry's *Récits des temps mérovingiens*, Thiers's *L'expédition de Bonaparte en Egypte*, Vigny's *La canne de jonc*, Voltaire's historical writings.

#### GERMAN.

**B. INTERMEDIATE GERMAN.\***—The preparation for this examination should comprise, in addition to the elementary course, the reading of about 400 pages of moderately difficult prose and poetry, with constant practice in giving, sometimes orally and sometimes in writing, paraphrases, abstracts, or reproductions from memory of selected portions of the matter read; also grammatical drill upon the less usual strong verbs, the use of articles, cases, auxiliaries of all kinds, tenses and modes (with special reference to the infinitive and subjunctive), and likewise upon word order and word-formation.

The intermediate course is supposed to be the elementary course, plus one year's work at the rate of not less than four recitations a week. Suitable reading matter for the third year can be selected from such works as the following: Freytag's *Die Journalisten* and *Bilder aus der deutschen Vergangenheit*—for example, *Karl der Große*, *Aus der Kreuzzügen*, *Doktor Luther*.

#### SPANISH.

The preparation for this examination should comprise: (1) Careful drill in pronunciation; (2) the rudiments of grammar, including the conjugation of the regular and the more common irregular verbs, the inflection of nouns, adjectives and

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\* For the requirement in Elementary German (German A) see p. 87.

pronouns, and the elementary rules of syntax; (3) exercises containing illustrations of the principles of grammar; (4) the reading and accurate rendering into good English of from 100 to 175 duodecimo pages of graduated texts, with translation into Spanish of easy variations of the sentences read; (5) writing Spanish from dictation.

During the second year the work should comprise: (1) the reading of from 250 to 400 pages of modern prose from different authors; (2) practice in translating Spanish into English, and English variations of the text into Spanish; (3) continued study of the elements of grammar and syntax; (4) mastery of all but the rare irregular verb forms and of the simpler uses of the modes and tenses; (5) writing Spanish from dictation; (6) memorizing of easy short poems.

Suitable texts for the second year are: Valera's *El Pájaro verde*; Alarcón's *El final de Norma*; Valdés's *José*; Goldós's *Dofía Perfecta, Marianela*.

#### MATHEMATICS.

**B. ADVANCED ALGEBRA.**—Permutations and combinations, limited to simple cases. Complex numbers, with graphical representation of sums and differences. Determinants, chiefly of the second, third and fourth orders, including the use of minors and the solution of linear equations. Numerical equations of higher degree, and as much of the theory of equations, with graphical methods, as is necessary for their treatment, including Descarte's rule of signs and Horner's method, but not Sturm's functions or multiple roots.

**D. SOLID GEOMETRY.**—The usual theorems and constructions of good text-books, including the relations of planes and lines in space; the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and the spherical triangle. The solution of numerous original exercises, including loci problems. Applications to the mensuration of surfaces and solids..

**E. RUDIMENTS OF PLANE TRIGONOMETRY.**—Including the definitions and relations of the six trigonometrical functions as ratios; proof of elementary formulas; theory and practice of the use of tables of logarithms; solution of right and oblique plane triangles.

**NOTE.—Mathematics E is exclusively for candidates for admission to the Courses in Engineering, Chemistry, and**

**Finance and Commerce** who offer Trigonometry. Candidates for admission to the Course in Arts and Science who offer Trigonometry as an entrance requirement, or who offer this subject for advance credit will take Mathematics F.

**F. PLANE TRIGONOMETRY.**—Definitions and relations of the six trigonometric functions as ratios; circular measurement of angles. Proofs of principal formulas; in particular for the sine, cosine, and tangent of the sum and the difference of two angles, of the double angle and the half angle, the product expressions for the sum of the difference of two sines or of two cosines, etc.; the transformation of trigonometric expressions by means of these formulas. Solution of trigonometric equations of a simple character. Theory and use of logarithms (without the introduction of work involving infinite series). The solution of right and oblique triangles, and practical applications.

#### SCIENCE.

**PHYSICS A**—As in Carhart and Chute's, or Gage's *Elements of Physics*.

Although at present no laboratory work is included in the requirement in Physics A, yet a note book, properly certified in accordance with the regulations of the College Entrance Examination Board, will be given due consideration.

**NOTE.—Physics A is exclusively for candidates for admission to the Courses in Engineering, Chemistry, Architecture, and Finance and Commerce, who offer Physics. Candidates for admission to the Course in Arts and Science who offer Physics as an entrance requirement will take Physics B.**

**PHYSICS B**—It is recommended that the candidate's preparation in physics should include:

(a) Individual laboratory work, comprising at least thirty-five exercises selected from a list of sixty or more, not very different from the list given below.

(b) Instruction by lecture-table demonstrations, to be used mainly as a basis for questioning upon the general principles involved in the pupil's laboratory investigations.

(c) The study of at least one standard text-book, supplemented by the use of many and varied numerical problems, "to the end that a pupil may gain a comprehensive and connected view of the most important facts and laws in elementary physics."

## FIRST PART.

*Mechanics and Hydrostatics:*

1. Weight of unit volume of a substance.
2. Lifting effect of water upon a body entirely immersed in it.
3. Specific gravity of a solid body that will sink in water.
4. Specific gravity of a block of wood by use of a sinker.
5. Weight of water displaced by a floating body.
6. Specific gravity by flotation method.
7. Specific gravity of a liquid; two methods.
8. The straight lever; first class.
9. Center of gravity and weight of a lever.
10. Levers of the second and third classes.
11. Force exerted at the fulcrum of a lever.
12. Errors of a spring balance.
13. Parallelogram of forces.
14. Friction between solid bodies (on a level).
15. Coefficient of friction (by sliding on incline).

*Light:*

16. Use of photometer.
17. Images in a plane mirror.
18. Images formed by a convex cylindrical mirror.
19. Images formed by a concave cylindrical mirror.
20. Index of refraction of glass.
21. Index of refraction of water.
22. Focal length of a converging lens.
23. Conjugate foci of a lens.
24. Shape and size of a real image formed by a lens.
25. Virtual image formed by a lens.

## SECOND PART.

*Mechanics:*

26. Breaking-strength of a wire.
27. Comparison of wires in breaking tests.
28. Elasticity: stretching.
29. Elasticity: bending; effect of varying loads.
30. Elasticity: bending; effect of varying dimensions.
31. Elasticity: twisting.
32. Specific gravity of a liquid by balancing columns.

33. Compressibility of air; Boyle's law.
34. Density of air.
35. Four forces at right angles in one plane.
36. Comparison of masses by acceleration-test.
37. Action and reaction: elastic collision.
38. Elastic collision continued: inelastic collision.

*Heat:*

39. Testing a mercury thermometer.
40. Linear expansion of a solid.
41. Increase of pressure of a gas heated at constant volume.
42. Increase of volume of a gas heated at constant pressure.
43. Specific heat of a solid.
44. Latent heat of melting.
45. Determination of the dew-point.
46. Latent heat of vaporization.

*Sound:*

47. Velocity of sound.
48. Wave-length of sound.
49. Number of vibrations of a tuning-fork.

*Electricity and Magnetism:*

50. Lines of force near a bar magnet.
51. Study of a single-fluid galvanic cell.
52. Study of a two-fluid galvanic cell.
53. Lines of force about a galvanoscope.
54. Resistance of wires by substitution: various lengths.
55. Resistance of wires by substitution: cross sections and multiple arc.
56. Resistance of Wheatstone's bridge: specific resistance of copper.
57. Temperature-coefficient of resistance in copper.
58. Battery resistance.
59. Putting together the parts of a telegraph key and sounder.
60. Putting together the parts of a small motor.
61. Putting together the parts of a small dynamo.

**LABORATORY NOTE-BOOK.**—Every candidate must present at the time of and as part of the examination in physics a note-book containing in the candidate's own language a description of his laboratory exercises, the steps, observations, and results of

each exercise being carefully recorded. The record should be well-ordered, plainly legible, and concise. Simple drawings are the briefest and best descriptions of most apparatus. Mere repetitions of directions or descriptions given elsewhere should be avoided, but the note-book must afford clear evidence of the pupil's ability to make accurate observations, and to draw correct conclusions.

The note-book must contain an index of experiments, and must bear the endorsement of the teacher, such endorsement being written in ink on the inside of the cover. The endorsement must be in effect as follows:

I certify that this note-book is a true and original record of experiments actually performed by .....  
in the physical laboratory of ..... School  
during the year 190.....

Instructor in Physics.

The ratio of counts for laboratory note-book and for examination shall be as 30 to 70.

The laboratory note-book will be returned to the candidate upon request at any time within one year after the examination. Laboratory note-books will not in general be preserved longer than one year.

#### CHEMISTRY.

The following outline includes only the indispensable things which must be studied in the class-room and laboratory. The material is, for the most part, common to all elementary textbooks and laboratory manuals. Each book makes its own selection of facts beyond those which may be necessary for the illustration of the principles of the science. The order of presentation will naturally be determined by the teacher.

**OUTLINE.**—The chief physical and chemical characteristics, the preparation and the recognition of the following elements and their chief compounds: *oxygen, hydrogen, carbon, nitrogen, chlorine, bromine, iodine, fluorine, sulphur, phosphorus, silicon, potassium, sodium, calcium, magnesium, zinc, copper, mercury, silver, aluminum, lead, tin, iron, manganese, chromium*.

More detailed study should be confined to the italicized ELEMENTS (as such) and to a restricted list of compounds such as: water, hydrochloric acid, carbon-monoxide, carbon-dioxide, nitric

acid, ammonia, sulphur dioxide, sulphuric acid, hydrogen-sulphide, sodium-hydroxide.

Attention should be given to the atmosphere (constitution and relation to animal and vegetable life), flames, acids, bases, salts, oxidation and reduction, crystallization, manufacturing processes, familiar substances (illuminating gas, explosives, baking powder, mortar, glass, metallurgy, steel, common alloys, porcelain, soap).

Combining proportions by weight and volume; calculations founded on these and Boyle's and Charles's laws; symbols and nomenclature (with careful avoidance of special stress, since these are non-essentials); atomic theory, atomic weights and valency in a very elementary way; nascent state; natural grouping of the elements; solution (solvents and solubility of gases, liquids, and solids, saturation); ionization; mass action and equilibrium; strength (activity) of acids and bases; conservation and dissipation of energy; chemical energy (very elementary); electrolysis. Chemical terms should be defined and explained, and the pupil should be able to illustrate and apply the ideas they embody. The theoretical topics are not intended to form separate subjects of study, but should be taught only so far as is necessary for the correlation and explanation of the experimental facts.

The facts should be given as examples from various classes, and not as isolated things. Thus, to speak of a "standard method of preparing hydrogen," whereby the action of zinc on hydrochloric acid is meant, shows narrow and infertile teaching. It should be shown that all acids are acted upon by certain classes of metals to produce hydrogen. Examples of both classes of metals should be given and the general principles derived. The reason for using zinc and hydrochloric acid in the laboratory can then be stated.

It is recommended that the candidate's preparation in chemistry should include:

(a) Individual laboratory work, comprising at least forty exercises selected from a list of sixty or more, not very different from the list given below.

(b) Instruction by lecture-table demonstrations, to be used mainly as a basis for questioning upon the general principles involved in the pupil's laboratory investigations.

(c) The study of at least one standard text-book, to the end that the pupil may gain a comprehensive and connected view of the most important facts and laws of elementary chemistry.

## LIST OF EXPERIMENTS.

*General:*

1. Composition of the atmosphere.
2. Dissociation of mercuric oxide, and study of resulting products.
3. Burning of magnesium, sodium, and potassium in air, and of iron in oxygen, with study of resulting products.
4. Combination of substances produced in (3) with water, and study of results.
5. Burning of sulphur and phosphorus in air; study of products.
6. Combination of substances produced in (5) with water; study of products.
7. Treatment of substances resulting from (3) and (4) with hydrochloric acid, and examination of final products.

*Laws of Gas Volumes and Vapor Tension:*

8. Boyle's Law.
9. Charles's Law.
10. Vapor tension as related to temperature.

*Common Elements and Compounds:*

11. Preparations and study of oxygen.
12. Weight of a litre of oxygen under standard conditions.
13. Preparation of hydrogen by action of sodium on water.  
Careful study of by-product.
14. Preparation of hydrogen by zinc and acid. More thorough study of hydrogen in larger quantities. Study of by-product.
15. Weight of a litre of hydrogen under standard conditions.  
(Optional for best students.)
16. Proportion by weight in which hydrogen and oxygen unite.  
(Lecture demonstrations with eudiometer.)
17. Proportion by weight in which hydrogen and oxygen combine.
18. Study of boiling point, freezing point, action on litmus, and taste of substance produced by combining oxygen and hydrogen.
19. Electrolysis of water, resulting gases being accurately measured and tested.
20. Vapor density of water, conclusion as to formula for water.  
(Optional for best pupils.)

21. Study of sodium, potassium, lithium, strontium, calcium, and barium compounds. Detection of presence of these metals by flame tests and by spectroscope.
22. Study of salts of cobalt, copper, nickel, manganese, chromium, iron. Tests for these metals and those mentioned in 21 in unknown mixtures.
23. Study of compounds of aluminum, magnesium, and zinc. Tests for these in mixtures of 21 and 22.
24. Tests for silver, lead, and bismuth in unknown mixtures of 21, 22 and 23.
25. Tests for mercury and arsenic in unknown mixtures of 21, 22, 23 and 24.
26. Preparation and study of chlorine gas.
27. Weight of a litre of chlorine.
28. Combustion of chlorine in hydrogen.
29. Preparation of hydrochloric acid and study of properties.
30. Decomposition of hydrochloric acid gas by sodium amalgam, and conclusions as to percentage composition. Avogadro's Law.
31. Preparation and study of at least three chlorides.
32. Preparation and study of bromine.
33. Preparation of at least three bromides.
34. Preparation and study of iodine.
35. Preparation of at least three iodides.
36. Comparative study of the chemism of chlorine, bromine, and iodine by mutual displacement.
37. Study of hydrofluoric acid and fluorides.
38. Determination of the combination proportion of chlorine and zinc and the atomic weight of zinc.
39. Atomic weight of zinc from specific heat. Law of Dulong and Petit.
40. Atomic weight of silver by displacement of zinc.
41. Study of forms of sulphur.
42. Direct formation of sulphides.
43. Study of sulphurous oxide.
44. Preparation of sulphurous and sulphuric acids.
45. Preparation of at least two sulphites and two corresponding sulphates. Comparative study of these.
46. Decomposition of ammonium nitrate and study of nitrous oxide.

47. To determine the composition of nitrous oxide. Gay-Lussac's Law.
48. Preparation and study of nitric acid.
49. Preparation of three nitrates in three different ways.
50. Composition of gas formed by action of cold dilute nitric acid on copper.
51. Composition of gas formed by union of nitric oxide and oxygen.
52. Preparation of chromic anhydride, chromic acid, and potassium chromate.
53. Changing potassium chromate to potassium bichromate and back again. Oxidation and reduction in solutions.
54. Chromium as an acid-forming and as a base-forming element. Preparation of chromium sulphate.
55. Preparation of ferrous and ferric salts.

*Carbon and some Carbon Compounds:*

56. Product of burning charcoal. Tests.
57. Test for presence of carbon in wood, paper, kerosene, coal gas, alcohol.
58. Preparation of three carbonates.
59. Solubility of carbonates in the presence of carbon dioxide.
60. Effect of heat on suspension of carbonates in solution.
61. Carbon dioxide from fermentation.
62. Alcohol from fermentation.
63. Preparation of ether by alcohol and sulphuric acid.
64. Preparation of alkaline salts of fatty acids, or soap-making.

**LABORATORY NOTE-BOOK.**—Every candidate must present at the time of and as part of the examination in chemistry a note-book containing, in the candidate's own language, a description of his laboratory exercises, the steps, observations, and results of each exercise being carefully recorded. The record should be well-ordered, plainly legible, and concise. Simple drawings are the briefest and best descriptions of most apparatus. Mere repetitions of directions or descriptions given elsewhere should be avoided, but the note-book must afford clear evidence of the pupil's ability to make accurate observations and to draw correct conclusions.

The note-book must contain an index of experiments, and must bear the endorsement of the teacher, such endorsement being

written in ink on the inside of the cover. The endorsement must be in effect as follows:

I certify that this note-book is a true and original record of experiments actually performed by ..... in the chemical laboratory of ..... School during the year 19.....  
Instructor in charge.

The ratio of counts for laboratory note-book and for examination shall be as 30 to 70.

The laboratory note-book will be returned to the candidate upon request at any time within one year after the examination. Laboratory note-books will not in general be preserved longer than one year.

#### BOTANY.

Lecture and laboratory study extending over at least five hours per week for a year, conducted under definite instruction aided by text-book study. The scope of the work to be estimated in part by note-books with outline drawings included. The studies should comprise the structure of the cell, the formation of tissues, the general morphology, physiology and ecology of the seed, seedling and mature plant in the higher types. The broad principles governing plant classification should be thoroughly understood, and selected types similar to those recommended by the College Entrance Examination Board in Botany should be studied alike with text-book and laboratory aid. The lecture and laboratory work should be supplemented in all cases by studies made in the garden and the field. For more detailed information reference should be made to the detailed outline of study recommended by the College Entrance Examination Board.

#### ZOOLOGY.

Preparation in this subject presupposes a full year's course of five hours per week, not less than two-thirds of the time being devoted to laboratory work guided by definite directions. This should be supplemented by the study of some good elementary text-book, such as Parker and Parker, *Practical Zoölogy*, or Linville and Kelly, *General Zoölogy*.

The scope of the course should be similar to that outlined in

the text-books named. Each student should keep a laboratory note-book in which to enter from day to day a record of the laboratory work done; this record should consist of carefully labeled outline drawings of the chief structures studied, and accurate notes of all observations, experiments or demonstrations which cannot be recorded by drawings. This note-book, properly certified by the teacher, must be submitted by the applicant for admission. The requirements here outlined are essentially the same as those specified by the College Entrance Examination Board for the subject of Zoölogy, to which reference should be made for a more detailed description.

#### ADMISSION TO ADVANCED STANDING.

(1) Students who present themselves for admission to advanced standing, will be required (*a*) to satisfy the requirements for admission to the Freshman Class, and (*b*) to take examinations in those subjects in the course for which the applicant desires to receive advance credit.

At its option, the Committee on Admission to Advanced Standing may accept, in the case of students who come from other colleges, the work done at such colleges in any subject or subjects in lieu of examination, provided a statement is submitted properly certified by the authorities of such colleges, stating in detail the extent and character of the work done, and the grades attained.

(2) Every applicant for admission to advanced standing who comes from another college must present a letter of honorable dismissal from such college. Applicants who do not come from other colleges must conform in this regard to the regulations governing admission to the Freshmen Class.

(3) A graduate of another college of sufficient standing may be admitted without examination to the Senior Class as a regular student, provided (*a*) that his previous course has been such that in the judgment of the Committee on Admission to Advanced Standing he will be able to complete in one year the work required for the Bachelor's degree, in the course which he proposes to enter; and (*b*) that the professors in charge of the subjects which he proposes to take find that he has had the requisite preparation.

(4) No student may be admitted as a candidate for a degree after the beginning of the Senior year.

**ADMISSION TO SPECIAL AND PARTIAL COURSES.**

Every applicant for admission as a Special or Partial student is required to fill out a blank containing such question as may seem necessary to determine his general educational fitness, the reasonableness of his application, and the propriety of entertaining it. An application for admission to a special or partial course must be accompanied by certificates covering the prescribed requirements and must be received in time to have these certificates verified and approved before the beginning of the course for which application is made. The Committee on Admission to Special and Partial Courses may make supplementary inquiries of former teachers of the applicant, and of others to whom it may be referred.

In the case of special courses for which technical requirements are prescribed, or partial courses involving subjects requiring technical preparation, the head of the department concerned decides whether these requirements are satisfied. His decision on this point is final.

The Committee, with this additional evidence, accepts or rejects the application, or makes the admission of the candidate conditional on his passing such entrance examinations as it may see fit to prescribe.

The requirements for admission to the several authorized special courses are as follows:

**SPECIAL COURSE IN ARCHITECTURE.**

Candidates for admission to the two-year Special Course in Architecture must be at least twenty-one years of age (unless graduates of public high schools), and must have spent two years at work in the office of a practicing architect; or must have had such other technical training as may, in the judgment of the professor of architecture, be considered an equivalent. A candidate who is not a graduate of a public high school, or an equivalent preparatory school, will be required by the Committee to satisfy the professors in charge that he is qualified to take the work.

Candidates must further pass examinations in Freehand and Instrumental Drawing. Those who do not at the time of admission satisfy this requirement, must include the equivalent work in their course.

**SPECIAL COURSE IN BIOLOGY.**

The candidate must be at least eighteen years of age, and must satisfy the requirements for admission to the regular course, except in Latin, when only **B** and **C** or **D** are required. (For admission to the regular course in Biology see p. 82.)

**SPECIAL COURSE IN BUSINESS PRACTICE AND BANKING.**

A two-year Special course is offered in Business Practice and Banking.

A candidate must fulfil one of the following requirements:

1. If he be twenty-one years of age or over, the admitting committee will require him to satisfy the professors in charge that he is qualified to take the work.
2. If he be under twenty-one years of age he must have graduated from a public high school which has a course of at least three years in length and he must have had two years of business experience of a grade satisfactory to the professors in charge.

**SPECIAL COURSE IN MUSIC.**

The qualifications required to enter the course are, *first*, a knowledge of the rudiments of music; *second*, the ability to play on some instrument—preferably the piano or organ; and, *third*, that portion of the entrance requirements designated as English **A**.

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**GENERAL INFORMATION.****STATUS AND CLASSIFICATION OF STUDENTS.**

A student under the College Faculty may be a Full Student, Special Student or Partial Student.

A **FULL STUDENT** is one who pursues, in the manner prescribed by the Academic Council, one of the courses leading to a degree.

A **SPECIAL STUDENT** is one who pursues a course laid down by a professor or professors with the approbation of the Academic Council, with a view to a certificate of proficiency on the completion of that course. (See pages 101 to 102.)

A **PARTIAL STUDENT** is one who, under certain provisions, is permitted to pursue such individual subjects as he is competent to take.

*Full students in the courses in Arts and Science, Finance and Commerce, and in Biology are graduated upon the satisfactory completion of sixty (60) units of work, a unit of work being one hour a week of attendance at lecture or recitation, or two hours of laboratory work a week for one year. Full students in other courses which lead to a degree are graduated upon the satisfactory completion of the prescribed work.*

(a) IN THE SCHOOL OF ARTS.

A student with less than twelve (12) units of work to his credit at the beginning of any college year shall be classed as a Freshman.

A student who has to his credit at the beginning of any college year more than eleven (11) and less than twenty-four (24) units of work shall be classed during that year as a Sophomore.

A student who has to his credit at the beginning of any college year more than twenty-three (23) and less than thirty-nine (39) units of work shall be classed during that year as a Junior.

A student who has to his credit at the beginning of any college year from thirty-nine (39) to forty-seven (47) units of work shall be classed during that year as a Junior, unless he gives notice of his intention to try for his degree that year, in which case he shall be classed as a Senior.

A student with forty-eight (48) or more units of work to his credit at the beginning of any college year shall be classed as a Senior.

(b) IN THE TOWNE SCIENTIFIC SCHOOL.

A student in a course in the Towne Scientific School will be advanced to the next higher class if, at the opening of the college year, he has credit in 60 per cent of the total number of hours scheduled in the University Catalogue as the work of the preceding class.

FEES AND DEPOSITS.

The amounts noted in the appended schedule are for *Regular and Special Students*, and are for the full academic year. Tuition fees are payable in two equal parts, on October 1 and February 1, respectively. Remittances should be in cash, or by bank draft, certified cheque or postal money order, drawn for the exact amount due, made payable to the University of Pennsylvania, and sent to William O. Miller, Bursar, Room 102, College Hall. An addition is made to fees not paid within thirty-one days.

COURSE.	AMOUNT.
Architecture .....	\$200 00
*Arts and Science .....	150 00
Biology .....	150 00
*Biology (Two-year Course) .....	150 00
Chemical Engineering .....	200 00
Chemistry .....	200 00
Civil Engineering .....	200 00
Finance and Commerce .....	150 00
Mechanical or Electrical Engineering .....	200 00
Music .....	30 00

For regulations concerning Financial Obligations, see Part V.

**TUITION FEES FOR THE COURSES IN ARTS AND SCIENCE,  
FINANCE AND COMMERCE, AND BIOLOGY.**

The tuition fees for the courses in Arts and Science, Finance and Commerce, and Biology, are six hundred dollars (\$600.00) for the period of instruction leading to the degree, one hundred and fifty dollars (\$150.00) being paid by a regular student in each of the four years of his course. Students taking five years to finish the course may not be required to pay more than six hundred dollars (\$600.00). Students who finish the course in less than four years will, nevertheless, pay a total of six hundred dollars tuition before the degree is granted. Students in the course in Arts and Science who take the composite course in Medicine and those in the special course in Biology who register in the Department of Medicine the second year will pay \$200 tuition for the year. Special arrangements as to fees will be made upon application in cases of students admitted to advanced standing on credits from other institutions.

**TUITION FEES FOR THE COLLEGE COURSES FOR TEACHERS.**

The fees for the College Courses for Teachers are charged at the rate of \$10.00 per unit of instruction. A unit is one hour a week for one year. Two Laboratory hours count as one hour of lecture or recitation.

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\* The fee for students in the composite year in Medicine, or in the two-year course in Biology who are registered at the same time in the Department of Medicine, is \$200.

**FEE FOR GYMNASIUM AND HOUSTON CLUB.**

A fee of ten dollars (\$10.00) is added to the tuition fee of every male student in the college, for the privileges of the Gymnasium and the Houston Club. This fee is payable in two equal parts on October 1 and February 1. Students in the (special) Music and Teachers' Courses are not required to pay this fee.

**FEES OF PARTIAL STUDENTS.**

The tuition fees of a Partial student in any course of the College are ten dollars (\$10.00) a term for each hour a week, or, in the case of laboratory or drawing-room work, ten dollars (\$10.00) a term for each two hours a week. The maximum fee required of a Partial student shall, however, in no case exceed in amount the regular tuition fees of the department in which the student is registered.

**FEE FOR RE-EXAMINATION.**

A fee of five dollars (\$5.00) is charged for every re-examination, after the first, that the student is permitted to take.

**DEPOSITS AND EXPENSES.**

Each student on entering College is required to make a money deposit to cover loss of books, keys, etc., breakage in the laboratories, damage to University property, and other expenses. Any balance is returned upon graduation or withdrawal from College. Students in Teachers' Courses, unless they take work in laboratories, are not required to make a deposit. The deposit for each course is given in the appended table:

Arts.....	\$10 00*
Architecture.....	10 00
Biology.....	25 00
Chemistry.....	25 00
Engineering, all courses.....	25 00
Finance and Commerce.....	10 00*
Music.....	5 00

All students taking laboratory work in Biology pay an expense deposit of \$25. This regulation goes into effect in 1909-10.

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\* Except those who are taking laboratory courses in Biology, for whom the amount of deposit is \$25.

## GRADUATION AND CERTIFICATE FEES.

A graduation fee of twenty dollars (\$20.00) is charged to each candidate for a baccalaureate degree, and of ten dollars (\$10.00) to each candidate for the degree of Master of Science in Architecture. A like fee of ten dollars (\$10.00) is charged to each candidate for the technical degree of Civil Engineer, Mechanical Engineer, Chemical Engineer, or Electrical Engineer. The fee for Certificates of Proficiency in Special Courses is ten dollars (\$10.00). *No student will be recommended for a degree or certificate until all fees due the University have been paid.*

## BOARD AND LODGING.

Accommodation for students is provided in the Dormitories.\* Plans, prices, and all other information relating to the Dormitories may be had upon application to the Bursar. In order to make sure of rooms, students are advised to apply as early as April 1, if possible.

Table board may be had in the immediate vicinity of the University at prices ranging from \$3.50 per week upwards. A printed list of approved boarding places, with or without lodging, may be obtained at the Dean's office. The average price paid by students in such quarters for board and lodging is \$5.50 per week.

The figures given herewith are based upon the cost of living, either in the dormitories or in a boarding house.

	Min.	Max.
Board and lodging—thirty-seven weeks .....	\$185 00	\$350 00
Tuition and other fees (according to the character and year of the course) .....	160 00	210 00
Text-books (estimated).....	10 00	25 00
Graduation or Certificate Fee .....	10 00	20 00
	<hr/>	<hr/>
	\$365 00	\$605 00

## DIVISION OF SESSIONS.

The College year is divided into two terms of about eighteen weeks each. The first term began in 1908, on September 25, at 10 o'clock A. M. The second term begins on February 1, 1909, at 9 o'clock, and will end with Commencement on June 16. The

\* Fuller information in regard to the Dormitories will be found in Part V.

examinations for entrance in 1909 will begin on June 17 and September 16. The next College year will begin on September 24, 1909, at 10 A. M.

### EXAMINATIONS AND GRADES.

In subjects extending through both terms, no examinations will be held and no credits given at the end of the first term, except in the Wharton School.

For subjects completed at the end of the first term, one week will be set apart for examinations in such subjects as require it, except in the Wharton School.

At the end of the college year, two weeks will be set apart for examinations in such subjects as have been given through both terms and also for subjects given only in the second term.

In reporting the standing of each student in College on the completion of each subject the following grades only are employed: *d* (distinguished), *g* (good), *p* (passed), *n* (not passed).

### THESES.

The theses required of candidates for the Bachelor of Science and technical degrees must be sent to the Dean on or before May 1 in each year.

### DEGREES.

The degree of *Bachelor of Arts* (*A. B.*) is conferred on graduation upon students in the Arts and Science courses and the College Courses for Teachers who have presented Latin and Greek for admission and who have completed in College Greek 331, and Latin 431 and 432.

The degree of *Bachelor of Science* (*B. S.*) is conferred on graduation upon students in the Arts and Science courses and the College Courses for Teachers who have not taken Latin and Greek in College for at least one year three hours a week each.

The degree of *Master of Science in Architecture* (*M. S. in Arch.*) is conferred upon students who complete satisfactorily the work of the fifth, or graduate, year in the course in Architecture.

The degree of *Bachelor of Science in Economics* is conferred on graduation upon students in the course in Finance and Commerce.

The degree of *Bachelor of Science in Chemistry, Architecture, Civil Engineering, Chemical Engineering, Mechanical Engineering*,

*Electrical Engineering or Biology* is conferred on students who complete the four-year course in one of these subjects.

The technical degrees of *Civil Engineer (C. E.)*, *Mechanical Engineer (M. E.)*, *Electrical Engineer (E. E.)* and *Chemical Engineer (Ch. E.)* are conferred not less than three years after receipt of the baccalaureate degree, upon graduates of the four-year courses in these subjects who have successfully pursued their professions during such period, and who have also presented original theses acceptable to the Academic Council.

The degree of *Bachelor of Music*.—None but holders of Certificates of Proficiency in Music may proceed to this degree, which is conferred only upon satisfaction of the following requirements: (1) At least one year must elapse after the receipt of the Certificate before presentation of the thesis for the degree; (2) Candidates must pass an examination, both oral and written, in Harmony, Counterpoint, Composition and Orchestration; (3) They must submit (as thesis) an original composition in the form of a cantata, of such length as to require at least twenty minutes for its performance. The composition must be for *soli* and chorus. It must include at least one tonal fugue, and must be scored for full orchestra with a short orchestral prelude.

#### CERTIFICATES OF PROFICIENCY.

*Certificates of Proficiency* are awarded to students who pursue, and complete satisfactorily, the several authorized Special Courses offered by the College Faculty. (See pp. 101 and 102.)

Students who have pursued Partial Courses, and who have completed satisfactorily the individual subjects selected in each case, are entitled to an official *Statement of Study*, signed by the Dean of the College.

#### SCHOLARSHIPS.

Scholarships open to undergraduates in the College may be divided into two groups: first, those which may be held only by students from certain localities; and second, those which are general in their allotment. All candidates for scholarships must present themselves for the usual entrance examinations, excepting those who may be admitted to College on satisfactory diplomas granted by public high or normal schools.\*

No award of scholarships will be made until after the entrance examinations in June. Only such persons will be eligible for scholar-

*ships as have been admitted to the College without conditions in June preceding the opening of the College year for which the scholarship is sought.*

All candidates for scholarships (*except those awarded by the Philadelphia Board of Public Education*) in the College must transmit their applications and credentials to the Dean *on or before the 15th day of May* preceding the opening of the academic year in which they desire to enter.

Special attention is called to the fact that, while possession of a scholarship entitles the holder to free tuition, such holders are bound by all College rules and regulations equally with pay students; and any infraction of these regulations will render a holder liable to the forfeiture of his privileges. A scholarship does not carry with it remission of any fee but that for tuition.

#### GROUP I.

1. THE PENN SCHOLARSHIPS, two in number, founded in 1816, are filled by the Governor of the State from time to time as vacancies occur. They exist by virtue of a privilege confirmed to the heirs of Thomas Penn, one of the original Proprietaries of the Province of Pennsylvania.

2. THE PHILADELPHIA FREE CITY SCHOLARSHIPS.—Under an agreement with the City of Philadelphia, of date 1882, fifty free scholarships exist in the University for the benefit of graduates from the public schools. Of these, THE BENJAMIN FRANKLIN SCHOLARSHIPS, three in number, were endowed by the late Dr. William Pepper, and THE SAMUEL V. MERRICK SCHOLARSHIP by the late J. Vaughan Merrick, Esq. Candidates are examined by the Board of Public Education, and the scholarships, according to the number becoming vacant at the end of each academic year, are awarded to those who reach the highest grade in examination, provided that such grade be at least sixty-five per cent. Each scholarship entitles the holder to free tuition in any regular course in any department of the University. *All inquiries concerning the City Scholarships should be addressed to the Secretary of the Board of Public Education, City Hall.*

3. THE PENNSYLVANIA STATE SCHOLARSHIPS —In addition to the Philadelphia City Scholarships, five free competitive scholarships are open annually to students from the graduating classes of public high schools in the State of Pennsylvania *outside of Philadelphia*. Examination papers must be marked as in competition for the

Pennsylvania Scholarships. The examinations may be taken at any place where the University holds examinations through its representatives. Successful candidates may elect to enter any regular course in the College.

## GROUP 2.

1. THE BAIRD SCHOLARSHIP, founded in 1889 by Mrs. Matthew Baird, provides free tuition for one student.
2. THE MUHR SCHOLARSHIPS, founded in 1895 by the late Simon Muhr, provide free tuition for three students.
3. 4 and 5. THE JAMES LATTA (founded by William J. Latta, Esq.), ROBERT MORRIS and JOHN LOGAN SCHOLARSHIPS, established in 1900, provide free tuition for three students.
6. THE LOUISE HARRISON SCHOLARSHIP, founded in 1900 by Thomas S. Harrison, Esq., provides free tuition for one student in the Department of Chemistry.
7. THE THOMAS S. STEWART SCHOLARSHIP, founded in 1901 by Mrs. Thomas S. Stewart and the Messrs. Thomas S. and Ralph C. Stewart provides free tuition for one student in Architecture. In the event of no suitable person presenting himself at any time in Architecture, the scholarship may be awarded in other departments of the College.
8. THE HARTMAN KUHN SCHOLARSHIP, founded in 1901 by C. Hartman Kuhn, Esq.. in memory of his grandfather, of the Class of 1800, College.
9. THE THOMAS H. POWERS SCHOLARSHIP, founded in 1901 by Mrs. Mary Powers Harris, in memory of her father.
10. THE CHARLES BRINTON COXE SCHOLARSHIP, founded in 1901 by Eckley Brinton Coxe, Jr., in memory of his father, of the Class of 1862, College.
11. THE E. OTIS KENDALL SCHOLARSHIP, founded in 1901 by the Class of 1879, College, in memory of the late Vice-Provost of the University.
12. THE CADWALADER SCHOLARSHIP, founded in 1901 by John Cadwalader, Esq.
13. THE STEPHEN GREENE SCHOLARSHIP, founded in 1901.
14. THE CLASS OF 1878 MEMORIAL SCHOLARSHIP, founded in 1903.
15. THE ARCHITECTURAL ALUMNI SCHOLARSHIP, founded in 1903, provides free tuition for one student in Architecture, the nomination being vested in the Architectural Alumni Society of the University of Pennsylvania.

16. THE GEORGE SCHLEICHER SCHOLARSHIP.—Under the will of the late George Schleicher, of Philadelphia, the German Society of Pennsylvania holds in trust a fund for maintaining in this University a perpetual scholarship named after the testator. The income from \$5,000 is awarded annually to assist any worthy person of German birth or descent in the pursuit of his studies at Pennsylvania in any branch of learning except religion.

17. THE ALBERT MONROE WILSON SCHOLARSHIP, founded in 1904 by the Alumni of the College, in memory of the late Janitor of College Hall, and as a tribute to his zealous fidelity to duty during nearly fifty years of service in the University.

18. THE GEORGE BARNETT SCHOLARSHIP in Mechanical Engineering, founded in 1904 by his daughter, Mrs. Irene Barnett Halstead.

19. THE ECKLEY B. COXE SCHOLARSHIP, founded in 1904 by Mrs. Eckley B. Coxe, in memory of her husband, of the Class of 1858, College.

20. A TRAVELING SCHOLARSHIP, established in 1904 by the Philadelphia Group of the Alliance Française, awarded annually upon the recommendation of the Department of French to that student in the College considered best prepared for study at some one of the French universities.

21. THE MARTHA AUSTIN McDOWELL SCHOLARSHIP, founded in 1905 by J. Austin McDowell, in memory of his wife, to be awarded without limitation as to department.

22. THE JOHN H. CONVERSE SCHOLARSHIP, founded in 1905 by John H. Converse.

23. THE LAVINIA BARNETT FAIRCHILD SCHOLARSHIP, founded in 1906 for students in Civil Engineering.

24. THE WILLIAM P. HENSZEY SCHOLARSHIP, founded in 1906 by William P. Henszey of Philadelphia, to be awarded without limitation as to department.

25. THE SAMUEL R. SHIPLEY SCHOLARSHIP, founded in 1907.

26. THE PENNSYLVANIA INSTITUTION FOR THE INSTRUCTION OF THE BLIND has established a Scholarship in the Department of Arts.

27. THE PENNSYLVANIA INSTITUTION FOR THE INSTRUCTION OF THE BLIND has established a Scholarship in the Four Years' Course in Music.

28. THE ADAM CLARKE THOMPSON SCHOLARSHIP, founded in 1907, by Mrs. Robert E. Cook and Rev. William J. Thompson, in memory of their brother, of the Class of 1892, College.

**29. DEFERMENT OF PAYMENT SCHOLARSHIPS.**—The University grants to sixteen students of the entering class, eight in the School of Arts, and eight in the Towne Scientific School, the privilege of postponing tuition fees until after graduation. The terms upon which this privilege will be granted may be had from the Chairman of the Faculty Committee on Scholarships, who will provide a blank form of application. The Committee will ask the applicant to furnish satisfactory evidence of creditable scholarship standing, seriousness of purpose, and inability to pay any part of his fees during his course.

## PRIZES.

### FRESHMAN ENTRANCE PRIZES.

**1. THE EUGENE DELANO PRIZE** of fifty dollars for the best special examination in the French and German required for entrance to College.

**2. A prize of fifty dollars,** offered by THE CLASS OF 1880, for the best special examination in Mathematics by a candidate for admission to the course in Arts and Science.

The following prizes are offered annually:

**NOTE.**—All essays in competition for prizes must be handed to the Dean on or before May 1 in each year, must be signed with a fictitious name, and be accompanied by a sealed envelope, on which is written the fictitious name, and in which are enclosed the writer's real name and address. No prize will be awarded unless the work done for it reaches a high standard of excellence. Unless otherwise stated, the prizes are open to full students only.

### I. FACULTY PRIZES:

**1. A prize of thirty dollars** for the best Essay in Intellectual and Moral Philosophy by a member of the Senior Class. Subject: a discussion of Descartes' axiom, "*I think, therefore I am.*"

**2. A prize of ten dollars** for the best examination by a member of the Freshman Class on Greek Prose Composition with the Accents.

**3. A prize of thirty dollars** to a member of the Senior Class for the most meritorious work in the German Language and Literature over and above the regular course.

**4. A prize of thirty dollars** to a member of the Senior Class for the most meritorious work in the French Language and Literature over and above the regular course.

**5. A first prize of fifteen dollars, and a second prize of ten dollars,** for the best examination on the *Lectures on Quaternions* given to the voluntary Junior Class.

6. A prize of thirty dollars for the best Essay in History and English Literature by a member of the Senior Class. Subject: *The Political, Religious and Social Opinions of Sir Thomas More as shown in the Utopia.*

7. A prize of twenty dollars for the best Essay in English Literature by a member of the Junior Class. Subject: Addison's *Cato* and the *Dramatic Use of the Three Unities*.

8. A prize of twenty-five dollars, to be divided among the best three speakers in the annual Sophomore-Freshman contest in debate, the contest being open to the public.

9. A first prize of twenty-five dollars, and a second prize of fifteen dollars, for the best and second best preparations illustrating the anatomy of any vegetable. Open only to students in the Biological courses in Botany. The conditions are as follows: any one may be chosen: (a) A complete set of microscopic slides illustrating the year's work in Botany 71 or 72; (b) An accurately named collection of Herbarium specimens illustrating the flora around Philadelphia, to a distance of ten miles; (c) A collection of the Fungi (not including the fleshy forms) found in the Philadelphia neighborhood.

10. A first prize of twenty-five dollars, and a second prize of fifteen dollars, for the best and second best preparations illustrating the anatomy or embryology of any animal. Open only to students in the Biological courses in Zoölogy. The conditions are as follows: (a) Four dissections illustrating the anatomy of any simple Invertebrate; (b) Four dissections illustrating the comparative neurology of four Invertebrate types; (c) A complete series of mounted slides illustrating the histology or embryology of any animal; (d) Three preparations of distinct organic systems of from one to three species of Invertebrates.

11. A prize of ten dollars to the member of the Sophomore Class who shall pass the best special examination in sight reading of Latin.

12. A prize of ten dollars to the member of the Sophomore Class who shall pass the best special examination in sight reading of Greek.

## II. PRIZES FOUNDED BY ORGANIZATIONS:

1. THE HENRY REED PRIZE, founded by the SOCIETY OF THE ALUMNI (College) for the best English Essay by a member of the Senior Class, entitles the successful competitor to one year's interest

on six hundred dollars, and to a diploma of merit. Essays in competition for this prize are handed to the Dean for transmission to a committee of the Board of Trustees, by whom the prize is awarded. Subject: *The Poetry of Thomas E. Brown, the Manx Poet.*

2. A prize for the best, and a prize for the second best, Latin Essay by a member of the Graduating Class, offered by the SOCIETY OF THE ALUMNI (College). The first prize of forty dollars, and the second prize of twenty-five dollars, are awarded by a committee of the Society.

3. THE JOSEPH WARNER YARDLEY PRIZE, founded by THE CLASS OF 1877 in memory of their classmate, for the best Thesis in Political Economy by a member of the Senior Class. It entitles the successful competitor to one year's interest on five hundred dollars. Subject: *The Effect of the High Price of Coal on Manufactures in Eastern Pennsylvania.*

4. A prize founded by the PHI KAPPA SIGMA FRATERNITY in honor of their founder, Samuel Brown Wylie Mitchell, M. D., of the Class of 1852, for the most meritorious work done in the course in English Composition of the second year. It entitles the successful competitor to one year's interest on four hundred dollars.

5. THE ASSAYERS AND MINERS GANGUE offers a prize of the value of twenty-five dollars in books or apparatus to Post-Seniors in Chemistry and to Seniors in Chemistry (four-year course); the prize to be awarded by the Gangue with the advice of the professor in charge.

6. THE PRIESTLEY CLUB, composed of Alumni of the Chemical Department, offers a prize of twenty dollars each year to that member of the Graduating Class (Post-Senior or Senior, four-year course, Regular or Special), whose work for that year is most satisfactory. The award of the prize is to be determined by the Director of the John Harrison Laboratory of Chemistry, based upon the student's application, the grades obtained by examination and the presentation of a satisfactory thesis.

7. THE T-SQUARE CLUB OF PHILADELPHIA offers annually two prizes of membership in the organization. They are granted in October of each year to those two members of the Senior and Second-year Special Classes in Architecture, respectively, who shall have attained the highest standing in the preceding years of their courses, and who comply with the Club's general regulation regarding the submission of drawings. These prize memberships cover the period of the student's connection with the University without the payment of dues.

8. THE DANTE SOCIETY offers annually a prize of one hundred dollars for the best essay on a subject drawn from the life and works of Dante. Competition is open to all students, and graduates of not more than three years' standing, of any college or university in the United States. The judges of the essays submitted are a committee of the Society. For further information address the Secretary of the Society, Prof. F. N. Robinson, Longfellow Park, Cambridge, Mass.

9. THE PHILADELPHIA GROUP OF THE ALLIANCE FRANÇAISE, established in 1904, awards annually a medal to the student of either the Junior or Senior classes who has done the most meritorious work in French over and above the required courses.

10. THE PRIZE IN ARCHITECTURE of the American Academy in Rome, open for competition among qualified undergraduates and graduates of certain American architectural schools, including that of the University of Pennsylvania. This prize grants three years of residence and travel abroad for the study of classic and Renaissance architecture.

### III. PRIZES FOUNDED BY INDIVIDUALS:

1. A prize founded by HENRY LABARRE JAYNE, Esq., of the Class of 1879, for the best English Composition by a member of the Freshman Class. It entitles the successful competitor to one year's interest on two hundred dollars. Subject: *The Journal of William Bradford*.

2. A prize, originally founded by the late D. VAN NOSTRAND and generously continued by his business successors, for the member of the Junior Class in Civil Engineering who attains the highest general average of scholarship during the Junior year. The prize consists of twenty-five dollars.

3. THE GEORGE ALLEN MEMORIAL PRIZES, founded by JOSEPH G. ROSENKRANTZ, Esq., of twenty dollars each, are offered to members of the Junior Class taking the Greek and Latin courses as follows: In Greek, for the best examination on the *Oration of Demosthenes on the Crown*, read as an extra subject; and in Latin, for the best examination upon selections from Latin Literature of the Empire (Seneca Rhetor, Quintilian, Pliny the Younger and Suetonius), to be read as an extra subject.

Second prizes of ten dollars each are offered by the Faculty in both of these branches.

4. TWO DEBATING PRIZES, established by WILLIAM WEST FRAZIER, JR., a first prize of forty dollars and a second prize, twenty

dollars, to be awarded in a public debating contest, governed by the following conditions:

- a. Only those students shall be eligible to compete who have "made" one of the Intercollegiate debate teams for the year.
- b. The question shall be that of the Intercollegiate debate.
- c. The debate shall be held after the final trials for the team and before the date of the Intercollegiates.
- d. It shall be adjudged by a board of three judges, not officers of instruction of the University, appointed by the Provost. They shall in deciding take into consideration both the agreement and the manner of expression.

5. **THE FRAZIER PRIZE.**—**GEOGE H. FRAZIER, Esq.**, of the Class of 1887, offers annually a prize of a standard work in literature, to be chosen by him, and of a value of one hundred dollars, to the student in the College of the University of Pennsylvania, who, being a member of the Football team, Baseball team, Track team, or of the Crew, shall attain the highest standing in scholarship.

6. **THE ARTHUR SPAYD BROOKE MEMORIAL PRIZE** in the School of Architecture, of a cash value of fifty dollars, is awarded annually, in the form of medals, for meritorious work in Design, as follows: for the best record of distinguished rank, a Gold Medal of about forty dollars in value; for records of second and third place and of superior excellence, a Silver and a Bronze Medal, respectively. This prize has been established by MARIA WHARTON BROOKE, as a memorial to her son, ARTHUR SPAYD BROOKE, a graduate in Architecture of the Class of 1897.

7. **THE J. S. H. PRIZES.**—The following prizes are offered annually to students in the courses in Biology:

a. A prize of twenty-five dollars is offered to the student in the first-year class in the four-year course, or the two-year course, who having taken the entrance examinations without condition, shall have the highest standing in the class; the term standing and conduct to be determining factors, as well as the standing in examinations.

b. A prize of fifty dollars to the student, in the second year of the above-named courses, who shall stand first in the class, under similar conditions.

c. A prize of seventy-five dollars to the third-year student in the above-named courses, who shall stand first in the class, under similar conditions.

d. Beginning with the year 1904-05, and thereafter annually until further notice, a prize of two hundred and fifty dollars to the

fourth-year student in the four-year course, who shall stand first in the class, under similar conditions, the standing for the whole four years to be taken into account.

8. A prize of fifty dollars is offered annually, through the generosity of DR. S. WEIR MITCHELL, for the best thesis on *The Autumnal Coloration of Plant Parts*. Competition is open to advanced undergraduate and graduate students in Botany, investigations to be pursued for not longer than two years.

9. THE MULFORD PRIZE, established through the generosity of WILLIAM H. MULFORD, Esq., of the Class of 1902, is awarded annually to that member of the Graduating Class who shall attain the highest excellence in the expressive reading of Latin Prose and Verse, as shown by a special examination. The value of the prize is twenty-five dollars.

10. THE GEORGE SCHLEICHER PRIZE.—Under the will of the late GEORGE SCHLEICHER, of Philadelphia, the German Society of Pennsylvania holds in trust a fund for maintaining in perpetuity a prize to be named after the testator. This prize is of a value of fifty dollars, and is awarded annually to the best student—of whatever nationality he may be—in the German Language, or German Literature, or both.

11. THE JOHN STEWARDSON MEMORIAL SCHOLARSHIP IN ARCHITECTURE.—The value of this scholarship (established in 1897) is one thousand dollars, and the holder is required to spend one year in travel and in the study of Architecture in Europe under the direction of the Managing Committee. Candidates must be architectural students or practitioners under thirty years of age, resident in the State of Pennsylvania for at least one year immediately preceding the date of preliminary examinations, which must be passed unless acceptable certificates therefor are presented. The award is made annually to that candidate successful in the final examination in Design.

12. THE PHILO S. BENNETT PRIZE, given through the generosity of the HONORABLE WILLIAM J. BRYAN. The interest on \$400.00 is to be awarded annually for the best essay on *The Principles of Free Government*.

13. THE MARK AND SIMON HASSSLER PRIZE.—Mrs. Leon S. Fox has established a prize in the Department of Music of the annual value of twenty-five dollars in gold. This prize is to be known as The Mark and Simon Hassler Prize. For the terms upon which the prize is to be awarded, reference is to be had to the Professor of Music.

## I.—THE SCHOOL OF ARTS.

### COURSES IN ARTS AND SCIENCE, IN BIOLOGY, AND IN MUSIC.

In the courses in Arts and Science, and in Biology, a student will graduate upon the successful completion of sixty (60) units of work; a unit of work being the amount involved in attendance upon lectures or recitations for one hour a week for one year, or upon laboratory work for two hours a week for one year.

The curricula have been planned with the view of making it possible for a student to complete the course in three, four or five years, at his option. Fifteen units of work a year will normally constitute full work for a student who wishes to complete the course in four years; but students wishing to complete the course in the minimum time will take twenty (20) units of work each year, while those wishing to devote five years to the course will take twelve (12) units of work each year. Students will not ordinarily be permitted to take less than twelve (12) units of work in one year.

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### THE COURSE IN ARTS AND SCIENCE.

The work of this course consists of required studies, group work and free electives. The required studies amount to twenty-two (22) units of work, the group studies to eighteen (18) units, and the remaining twenty (20) units are made up of free electives.

No restrictions are laid upon the student as to the order in which he shall take any of the subjects in the course, excepting such as may follow from the natural sequence of related subjects, and from the limitations of the roster. The student usually will take as the required work in each of the branches named below the most elementary subjects offered, as these form in most cases the necessary basis for further advance in the same subjects.

*Required Studies.*—Each student must take in

Chemistry .....	2	units.
English.....	6	"
Foreign Languages: 3 units in each of two, amounting to .....	6	"
(118)		

History .....	2 units.
Logic and Ethics .....	2 "
Mathematics .....	2 "
Physics .....	2 "

**NOTE.**—The required work in Foreign Language may consist of work in any two foreign languages in which instruction to the extent of three units of work each is offered; but no student will be permitted to take in satisfaction of such requirement either French 281, German 321, Greek 343 (and 343 A), or Latin 430 (and 430 A, B, C).

Logic and Ethics will be found listed under the general title PHILOSOPHY.

**Group Work.**—Each student elects for his group either two or three of the eighteen subjects mentioned below. If he elects two, he is required to do nine units of work in each; if he elects three, he is required to do six units of work in each. After choosing the branches which shall constitute his group, the student is at liberty to select any subjects from the list of those offered in these branches to make up the required six or nine units, except in so far as his choice may be restricted by the necessary sequence of studies and by the roster. Students are advised to plan their work in consultation with the professors in charge of the different branches.

Astronomy,	Geology,*	Physics,
Botany,	German,	Political Science,
Chemistry,	Greek,	Psychology,
Economics,	History,	Sociology,
English,	Latin,	Zoölogy.
Fine Arts,	Mathematics,	
French,	Philosophy,†	

**Free Electives.**—The required studies and group work, together, amount to forty (40) units of work. The student takes the remaining twenty (20) units in free electives. Any subject open to a student in the course in Arts and Science may be taken as a free elective, provided the student's previous work qualifies him to pursue the subject, and the roster permits.

The subjects open to students in the course in Arts and Science are given in the list of subjects of instruction under the following

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\* This title covers also Metallurgy and Mineralogy.

† This title covers also Logic, Ethics and Pedagogy.

heads: Anthropology, Astronomy, Botany, Chemistry, Economics (except as otherwise noted), English, Fine Arts, French, Geology, German, Greek, Hebrew, History, Italian, Latin, Linguistics, Mathematics, Metallurgy, Mineralogy, Pedagogy, Philosophy, Physics, Political Science (except as otherwise noted), Psychology, Sanskrit, Sociology (except as otherwise noted), Spanish, Zoölogy.

*NOTE.—It is recommended that students who desire to complete the course in three years enter with credits for six (6) units in Foreign Language, Mathematics, or History.*

*Roster.*—See folding sheet facing p. 172.

*Degrees.*—Students in the course in Arts and Science who present Latin and Greek for admission, and who take in College Greek 331, and Latin 431 and 432, receive on graduation the degree of Bachelor of Arts. Other students receive on graduation the degree of Bachelor of Science.

#### COMPOSITE YEAR IN MEDICINE.

A student in the course in Arts and Science may, in his Senior year, register also as a regular student in the First-year Class in the Department of Medicine. Students wishing to avail themselves of this privilege are required to do only fifty-two (52) units of purely College work, the other eight (8) units required for graduation being credited to them from the studies of the First-year Class in Medicine. The fifty-two (52) units taken in the College by such students must include at least sixteen (16) units in Biology, and three (3) units in Chemistry, in addition to the prescribed Chemistry and Physics including laboratory work. For other requirements for entrance into the Department of Medicine, see the announcements of that Department.

#### COMBINED COURSES IN ARTS AND SCIENCE AND IN ARCHITECTURE.

The course in Arts and Science and the course in Architecture may be so combined that a student at the end of the *fourth* year may receive his Bachelor's degree in Arts, and at the end of the *sixth* year his Bachelor's degree in Architecture. During the first two years of the combined courses, his work will be wholly in the course in Arts and Science; during the next two years, partly in both courses; and during the last two years, entirely in the course in Architecture.

## THE COURSES IN BIOLOGY.\*

## FOUR-YEAR COURSE.

*Required Studies.*—All students take the following subjects, amounting to 48 units of work:

Subjects.	Hours a week.	Units of Work.	Page where description is found.
English, 231, 232, 233, 234, 235, 257 . . . . .	6	6	199
German, 322, 323, or French, 282, 283, . . . . .	6.	6	212
Mathematics, 462 . . . . .	2	1	206 (1 term)
Physics, 601 . . . . .	3	2	228 244
Geology, 293 . . . . .	2	2	200
Chemistry, 91, 92 . . . . .	9	5	188
Botany, 71, 72, and 73-75, or 74-81 . . . . .	18	12	185
Zoology, 681, 683, 684, 685, 686 . . . . .	19	14	249-50

*Elective Studies.*—The remaining 12 units, which the student must complete before graduation, are to be made up from the following list:

Subjects.	Hours a week.	Units of Work.	Page where description is found.
Botany, 73 . . . . .	3	2	185
" 74 . . . . .	3	2	185
" 75 . . . . .	3	2	185
" 76 . . . . .	6	4	185
" 77 . . . . .	3	2	185
" 78 . . . . .	3	2	185
" 79 . . . . .	6	4	186
" 80 . . . . .	3	2	186
" 81 . . . . .	3	2	186
" 82 . . . . .	2	2	186
" 87 . . . . .	3	2	186
" 88 . . . . .	3	2	186
Mathematics, 461 . . . . .	2	1	228 (1 term)
Zoology, 682 . . . . .	3	2	249
" 687 } Given in alternate years.	4	3	250
" 688 } Given in alternate years.	6	4	250
" 689 } " " " "	6	4	250
" 690 } " " " "	6	4	250
" 691 } " " " "	3	2	250
" 692 } " " " "	2	2	251
" 693 . . . . .	3	2	

\*Open to both men and women.

Subjects.	Hours a week.	Units of Work.	Page where description is found.
Zoölogy, 694 . . . . .	2	2	251
" 695 . . . . .	2	2	251
Research Work in Botany or Zoölogy . . . . .	8	4	251
Chemistry, 93 . . . . .	5	3	188
" 95 . . . . .	5	3	188
*Physics, 602 . . . . .	4	2½	244
Psychology, 582 . . . . .	3	1	246
" 583 . . . . .	3	1	246
" 584 . . . . .	3	2	246
" 585 . . . . .	3	2	246
German, 327 A, B . . . . .	3	3	212
" 328 . . . . .	2	2	212
Pedagogy, 591 . . . . .	2	2	241

*Arrangement of Work.*—In planning his course, the student must observe carefully the necessary sequence of studies as set down in the tables giving the lists of subjects in the different branches. Apart from the restriction thus imposed, and from the limitations of the roster, the subjects may be taken in any order the student may prefer.

*Roster.*—See folding sheet facing p. 172.

*Degree.*—Graduates of this course receive the degree of Bachelor of Science in Biology.

*Note.*—It is recommended that students who desire to complete the course in three years enter with advanced credits for one and a half (1½) units in Mathematics and three (3) units in Foreign Language; and that they do at least one summer's work in Botany or Zoölogy under provisions approved by the Committee of Instruction in Biology.

#### TWO-YEAR SPECIAL COURSE.

This course is designed for students who are unable to take the regular course leading to a degree, and especially for those who intend later to take up the study of Medicine. A certificate of proficiency is granted to those who complete the course satisfactorily. Men only are admitted to the courses in the Department of Medicine.

*Requirements for Admission.*—The candidate must be at least eighteen years of age, and must satisfy the requirements for admission to the regular course, except in Latin, in which B and C or D are the required topics.

The course as given below is that for the present session, 1908-09.

\* Students taking this course and proposing subsequently to enter Medicine are required to offer for the latter the equivalent of Physics, 601 and 602.

## FIRST YEAR.

Subjects.	No. of hours a week.	
	1st Term.	2d Term.
Botany, 71 . . . . .	6	6
General and Invertebrate Zoölogy, 681 and 682 . . . . .	6	6
Mammalian Anatomy, 683 . . . . .	6	—
Vertebrate Morphology, 684 . . . . .	—	6
General Chemistry, 91 . . . . .	4	4
German, 322 . . . . .	3	3
<i>Elective.</i>		
Physics, 600 . . . . .	5	5
*Physics, 601 . . . . .	3	3

\* Trigonometry is a prerequisite for the course in Physics, 601

## SECOND YEAR.

## I.

<i>First Alternative.</i>		
Botany, 72 . . . . .	6	6
Embryology and Histology, 686 . . . . .	6	6
Physiology, 685 . . . . .	3	3
Chemical Analysis, 92 . . . . .	5	5
Psychology, 582 . . . . .	2	2
<i>Elective.</i>		
Any other Biological course for which students are prepared and can find the time.		

## II.

<i>Second Alternative.</i>		
Embryology and Histology, 686 . . . . .	6	6
Chemical Analysis, 92 . . . . .	6	—
*Physiological Chemistry . . . . .	—	9
*Human Anatomy (about) . . . . .	13	13
*Bacteriology . . . . .	3	3
*Pathology . . . . .	—	2
<i>Elective.</i>		
Botany, 72 . . . . .	6	6

\* Given in the Department of Medicine.

## THE COLLEGE.

Beginning with September, 1909, the course will be as below, but students who so desired have been admitted to it for the present year:

## FIRST YEAR.

Subjects.	No. of hours a week.	
	1st Term.	2d Term.
English, 231. Composition .....	1	1
Physics, 600 .....	5	5
Chemistry, 91. General Inorganic .....	4	4
German, 322 .....	3	3
Botany, 71. Structure and Functions of Plants .....	6	6
Zoölogy, 681. General .....	5	5

## SECOND YEAR.

Chemistry, 92. Qualitative Analysis .....	5	5
Botany, 72. Systematic .....	6	6
Zoölogy, 683. Mammalian Anatomy .....	6	—
Zoölogy, 684. Vertebrate Morphology .....	—	6
Zoölogy, 686. Histology and Embryology .....	6	6

## THE COURSE IN MUSIC.

The course in Music extends over a period of four years, and is open to both men and women. The qualifications for admission are as follows: (a) a thorough knowledge of the rudiments of Music; (b) the ability to play on some musical instrument—preferably the piano or organ; and (c) that portion of the requirements for admission to the College designated as English A (see pp. 83 and 84).

The session begins on the first Monday in October, and is divided into two terms of fifteen weeks each, during which lectures are delivered twice a week. Examinations are held at the close of each year. A certificate of proficiency is awarded to those students who complete the course and pass the final examinations satisfactorily. The tuition fee for each term is fifteen dollars (\$15.00), a deposit of five dollars (\$5.00), and a further fee of ten dollars (\$10.00) is required prior to the award of the certificate.

## OUTLINE OF INSTRUCTION.\*

**FIRST YEAR.**—Harmony. Combinations and successions of sounds.

**SECOND YEAR.**—Melody. The use of Unharmonized Dissonances. Forms of accompaniment. The simpler "Forms" of Composition. The Five Species of Strict Counterpoint in two, three and four parts. Instruction will also be given in the Elements of Rhetoric and Versification.

**THIRD YEAR.**—The larger "Forms" of Composition. Modern Counterpoint, Fugue, Canon.

**FOURTH YEAR.**—The Orchestra. Instrumentation. The scoring of some of the exercises already written, together with the composition and scoring of the graduation exercise.

## DEGREE OF MUS. BAC.†

None but holders of certificates, awarded as above, may proceed to the degree of *Bachelor of Music*, which is conferred only upon satisfaction of the following requirements:

1. At least one year must elapse after the receipt of the certificate before presentation of the thesis for the degree.
2. Candidates must pass an examination both oral and written, in Harmony, Counterpoint, Composition and Orchestration.
3. They must submit (as thesis) an original composition in the form of a cantata, of such length as to require at least twenty minutes for its performance. The composition must be for *soli* and chorus. It must include at least one tonal fugue, and must be scored for full orchestra with a short orchestral prelude.

Candidates for the degree of Mus. Bac. will be required to pass an examination in English equivalent to that demanded of all students for admission to College (English A and B); and also to take courses in English Composition and Literature.‡

Candidates are recommended to take a course of two years in Physics, the equivalent of that offered in the Courses for Teachers, as well as the course in the History of Music.

For further information, address Professor HUGH A. CLARKE,  
College Hall.

\* For description in detail, see pp. 238.

† The degree of *Doctor of Music (Mus. Doc.)* is conferred *honoris causa* only, upon composers who may have attained distinction in the field of Music by the production of some notable work in one or more of the larger "Forms."

‡ The roster may be arranged in consultation with Professor Schelling.

**II.—THE TOWNE SCIENTIFIC SCHOOL.**

A regular scientific course leading to a degree has existed in the College since the year 1852. In 1872, this course was enlarged and organized as a Department of Science, which, in 1875, was in large part endowed under the provisions of the will of the late JOHN HENRY TOWNE, a trustee of the University. In honor of his memory the Department of Science was named *The Towne Scientific School*, which now comprehends the courses in Architecture, in Mechanical Engineering, in Electrical Engineering, in Civil Engineering, in Chemistry, and in Chemical Engineering. A brief description of the several courses offered therein will be found on pp. 72 and 73, while the requirements for admission are set forth in detail on pp. 75 to 100.

**NEW ENGINEERING BUILDING.**

The departments of Civil, Electrical and Mechanical Engineering of the Towne Scientific School are now occupying a separate building. It is 300 feet long and 160 feet deep, with a wing fifty feet wide and forty feet deep at one end, the total working floor space being approximately 128,000 square feet. The construction is fire proof throughout.

The building contains the necessary accommodations for serving as headquarters for all the students in engineering, and a sufficient number of class rooms and drawing rooms for handling all the technical subjects of the departments. In addition it contains extensive laboratories fully equipped with the best modern apparatus for experimental work, pertaining to Civil, Electrical and Mechanical Engineering, including the testing of steam and gas engines, boilers, electric and hydraulic motors, dynamos, transformers and electrical apparatus, pumps and fans, refrigerating machinery, the investigation of the physical properties of the materials of engineering, the study of the laws governing the flow and discharge of water through orifices, weirs and pipes, and facilities for calorimetric and geodetic work. The shops are fully equipped for practical instruction in wood and iron working, forge and foundry work.

## THE COURSES IN ARCHITECTURE.

## OFFICERS.

**CHARLES C. HARRISON, LL. D., *Provost.***  
**EDGAR F. SMITH, PH. D., Sc. D., LL. D., *Vice-Provost.***  
**JOSIAH H. PENNIMAN, PH. D., LL. D., *Dean of the College.***  
**WARREN POWERS LAIRD, *Architecture: Professor in Charge.***  
**PAUL P. CRET, A. D. G. F., *Design.***  
**HERBERT E. EVERETT, *Drawing and History of Painting.***  
**THOMAS NOLAN, M. S., A. M., *Architectural Construction.***  
**GEORGE WALTER DAWSON, *Drawing.***  
**CHARLES F. OSBORNE, *Architectural History.***  
**FRANK ALLISON HAYS, *Pen-and-Ink Rendering.***  
**PHILIP R. WHITNEY, S. B. in Arch., *Architecture.***  
**ALFRED H. GUMAER, B. S. in Arch., *Design.***  
**ROY DONALD BASSETTE, B. S. in Arch., *Drawing.***  
**WILLIAM EDWARD GROBEN, B. S., in Arch., *Design.***  
**GERALD ANDERSON HOLMES, B. S. in Arch., *Design.***  
**GEORGE HYDE HULIN, B. S. in Arch., *Construction.***  
**ROY CHILDS JONES, B. S. in Arch., *Drawing.***

The University offers a full professional course of instruction, leading to the Degree of Bachelor of Science in Architecture. While no period is fixed for the completion of its work, the average student can, with diligence, accomplish this in four years. It may then be followed by a Graduate year, leading to the Degree of Master of Science in Architecture.

There is offered also a special course of study, open to qualified architectural draughtsmen and comprising the technical subjects most needed by them. This may be completed in two years and leads to a Certificate of Proficiency in Architecture.

To those who wish to specialize in architectural engineering, is given the opportunity to take a year's work in this subject in lieu of the final year of the regular course, the degree being the same in either case.

Tuition fees for the courses in Architecture are two hundred dollars (\$200.00) a year.

## COMBINED COURSE IN ARTS AND SCIENCE AND IN ARCHITECTURE.

A candidate for the A. B. or B. S. degree may secure also the Bachelor's degree in Architecture by devoting six years of work

to both courses. To effect this, the first two years are given to subjects in the course in Arts and Science; the next two to the completion of this course (upon which the A. B. or B. S. degree is granted) and to the first part of the course in Architecture; and the final two years to the completion of the latter, upon which the degree of B. S. in Arch. is granted. For the details of this arrangement, see schedule of work on pp. 140 and 141.

### OUTLINE OF INSTRUCTION.

#### THE FULL COURSE.

The University aims to secure to its graduates in Architecture the general training prerequisite to the demands of the best professional practice. To that end the scheme of study combines complete technical instruction with the essentials of a liberal education. The purely professional work is so arranged as to lay a broad and solid foundation for the future needs of the practicing architect, while incidentally preparing the student to become, upon graduation, of immediate usefulness as an architect's assistant. The liberal elements of the course include both those studies essential to a general college education, and those forming that part of the professional curriculum in which special stress is laid on the esthetic side of architecture.

The course of study is organized upon the principle that architecture is primarily a fine art. The study of design is therefore emphasized, the student being required to give to it and to its preparatory and accessory subjects an important portion of his time throughout the course. Supporting this line of study and broadening the general view of the student are the history courses, covering exhaustively the field of architecture and giving general treatment to that of painting. Careful study is given to the nature of building materials, and to the theory and practice of construction and of building sanitation. Draughtsmanship receives constant attention throughout the course, not only in the courses in design but also in various lines of instruction in pure drawing.

The professional work thus outlined covers some three-fourths of the time required of the student. The remainder is devoted to general studies, which are pursued during the first two years of the course, and which include two years each of English (composition, rhetoric and literature); of French or German; and of Mathematics (Trigonometry, Analytic Geometry and Calculus); and one year

of Chemistry. The instruction in these subjects is that given also in the course in Arts and Science.

The School of Architecture has a large equipment to which additions are being constantly made. It comprises a working library of over one thousand volumes; a large file of American and foreign periodicals; over twenty thousand mounted photographs, plates, illustrations, and lantern slides, classified for ready reference; numerous autograph drawings and models; and a collection of casts from the antique, architectural ornament, etc. The school occupies the third floor of College Hall, in a suite of thirteen rooms, and also, as a studio, a large one-story building on the University campus.

#### THE OPTION IN ADVANCED ARCHITECTURAL CONSTRUCTION.

The subjects forming this course are offered to architectural students desiring to specialize in that field of construction, the problems of which, relating to buildings rather than to structures peculiar to civil engineering, are comprehended under the general term "Architectural Engineering." This course is a differentiation from the advanced work in the full course in architecture, by which a large portion of the regular work in design, drawing, etc., gives place to structural design and kindred subjects, and may be elected in the last year, prior to which no change in the regular course is necessary.

#### THE GRADUATE YEAR.

The fifth year in Architecture provides opportunities for specialization not to be found in undergraduate courses.

If the student can devote a final year of study to that particular field toward which his tastes and abilities direct him, the value of his technical training will be greatly enhanced. The nature of this fifth-year course is such that it can be adjusted to the needs either of those who may desire to specialize, or of those who wish to round out broadly the work of the regular course by advanced training and research.

#### THE TWO-YEAR SPECIAL COURSE.

Architectural draughtsmen of experience, desiring to supply deficiencies in technical training and unable to give the time necessary to the completion of the full or regular course, are admitted as

special students, if eligible under certain requirements indicated on p. 101. Such students pursue a definite course of study, arranged to permit the completion, in two years, of much of the advanced technical work of the four-year course; and they may, when prepared, elect the option in advanced architectural construction. Also, when prepared at entrance with any of the subjects of the course, they may at once take advanced work in such subjects, thus comprising within the time limit of their course subjects lying beyond it. A satisfactory completion of this course is recognized by the award of a certificate of proficiency.

#### ADVANCED STANDING.

College graduates may, upon presentation of their diplomas, secure advanced standing in the full course. In all such cases the University reserves the right to decide whether the diploma presented covers satisfactorily the academic work required.\*

#### THE UNIVERSITY ATELIER.

For alumni and other qualified persons the University has established an atelier for the study of design. Members may take individual problems or may follow the programme of the Beaux Arts Society, as desired. Criticism is given by Professor Cret two evenings each week, and the room is open for work each week-day afternoon and evening. The library of the School of Architecture is also available for evening use by the members.

Fees are ten dollars for any single *projet*, payable within thirty days of its sketch or thirty-five dollars for the full session (covering five *projets*) payable on or before November 3, 1909. The due payment for four successive *projets* will entitle the member to the final without payment.

New quarters have been fitted up for the atelier in the studio building at 36th Street and Hamilton Walk.

Applications for membership should be addressed to Professor Warren P. Laird, at the University.

#### LIST OF ATELIER MEMBERS FOR 1908-1909.

J. H. Dulles Allen, Enfield, Pa.  
Roy Donald Bassette, 3715 Chestnut St., Philadelphia.

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\* See also under *Admission To Advanced Standing*, page 100.

**Beaver Wade Day**, care of Newman & Harris, Land Title Annex,  
Philadelphia.

**Edward B. Delk**, 630 N. Broad St., Philadelphia.

**Louis M. Dorsey**, 2018 N. 18th St., Philadelphia.

**James Hutchinson Forsythe**, care of Paul A. Davis, 1600 Chestnut  
St., Philadelphia.

**Paul J. Henon, Jr.**, 6124 Walnut St., Philadelphia.

**Gerald Anderson Holmes**, 320 N. 52d St., Philadelphia.

**George S. Idell**, 7342 Rural Lane, Mt. Airy, Philadelphia.

**Roy Childs Jones**, 3715 Chestnut St., Philadelphia.

**Paul Monaghan**, 3602 Spring Garden St., Philadelphia.

**Clyde W. Smith**, 2308 Green St., Philadelphia.

**William Cyril Stanton**, 4616 Cedar Ave., Philadelphia.

**Werner Trumbower**, 1202 Crozer Building, Philadelphia.

#### PRIZES AND SCHOLARSHIPS.

The following Prizes, Scholarships, etc., are open to students in the School of Architecture, or to its graduates, and are briefly described elsewhere:

**THE JOHN STEWARDSON MEMORIAL SCHOLARSHIP IN ARCHITECTURE**, p. 117.

**THE PRIZE IN ARCHITECTURE OF THE AMERICAN ACADEMY IN ROME**, p. 115.

**THE ARTHUR SPAYD BROOKE MEMORIAL PRIZE**, p. 116.

**THE T-SQUARE CLUB PRIZE MEMBERSHIPS**, p. 114.

**THE THOMAS S. STEWART SCHOLARSHIP**, p. 110.

**THE ARCHITECTURAL ALUMNI SOCIETY SCHOLARSHIP**, p. 110.

#### SCHEME OF STUDY.

The subjects of study required for the Degree of B. S. in Architecture are arranged in such sequence that they may be completed in four years. Students entering with credit for the non-architectural subjects can earn the degree in two or in three years, depending upon their technical preparation.

The non-architectural studies,—English, French or German, Mathematics, and Chemistry—must be taken during the first two years.

The work in Design and in Drawing is so arranged that each student, upon admission, is placed in the grade for which he is

fitted and may then progress as rapidly as his ability will warrant. To secure standing in any grade beyond the first, the student must present satisfactory evidence of his previous work or undergo a test, or both, as the instructor may require.

The Special Course is composed of certain subjects of the full course so arranged that they can be completed in two years. Advanced standing is granted in this course to candidates who have completed the equivalent of any part of its work. This, in the case of students offering Elements and other topics preparatory to Design, permits advanced work in this subject within the two year period allotted to the course.

The several courses of study require the completion of units of work as follows:

	Full Course.	Graduate Year.	Special Course
<b>Architectural subjects:</b>			
Drawing.....	17	4	10
History, Practice and Ethics .....	9	3	8
Building Construction .....	6	—	4½
Design.....	37	15	22
<b>Non-Architectural subjects:</b>			
First year.....	11	—	—
Second year.....	8	—	—
<b>Total units required.....</b>	<b>88</b>	<b>22</b>	<b>44½</b>

## NORMAL SCHEDULES

The studies enumerated below under "Architectural" and "Non-Architectural," constitute the full course. They are presented in such sequence that the average student can complete them in four years by taking in each academic session 22 units of work, the following schedule indicating the student's normal progress. The subjects are so presented, however, as to allow for advanced standing and for a progress in design and drawing more rapid than usual.

## REGULAR COURSE

Leading to the Degree of B. S. in Architecture.

## FIRST YEAR.

## SECOND YEAR.

Subject No.	Unit Values.		Subject No.	Unit Values.		
	1st Term.	2d Term.		1st Term.	2d Term.	
Arch. 1 . . . . .	1	—	Arch. 11 . . . . .	4	—	
" 2a. . . . .	1	—	" 13 . . . . .	—	3	
" 2b. . . . .	—	1	" 15 . . . . .	—	—	
" 3 . . . . .	2*	—	" 16 . . . . .	—	1	
" 4 . . . . .	—	2*	" 17 . . . . .	2	2	
" 6 . . . . .	2	—	" 3ab. . . . .	—	—	
" 7 . . . . .	—	1	Architectural Units			
" 9 . . . . .	—	1				
Architectural Units						14
Eng. 231. . . . .	2*	2*	Eng. 235 . . . . .	2*	2*	—
" 234. . . . .	1	—	" 233 . . . . .	1	—	—
" 232. . . . .	—	1	" 257 . . . . .	—	1	—
Fr. 282A . . . . .	1	1	Fr. 283A . . . . .	1	1	—
" 282B. . . . .	2*	2*	" 283B . . . . .	2*	2*	—
or						—
Ger. 322A . . . . .	1	1	Ger. 323A . . . . .	1	—	—
" 322B. . . . .	2*	2*	" 323B . . . . .	—	1	—
Math. 482 . . . . .	1 2*	—	" 323C . . . . .	2*	2*	—
" 480 . . . . .	—	1 2*	Math. 487 . . . . .	1	1	—
Chem. 91 . . . . .	1	1	Non-Architectural Units			
Non-Architectural Units						8
First Year Units . . . . .	11		Second Year Units			
	22			22		

## THIRD YEAR.

## FOURTH YEAR.

Subject No.	Unit Values.		Subject No.	Unit Values.	
	1st Term.	2d Term.		1st Term.	2d Term.
Arch. 19 . . . . .	2	—	Arch. 36 . . . . .	7	3
" 21 . . . . .	5	—	" 38 . . . . .	—	5
" 22a. . . . .	—	6	" 40a. . . . .	1	—
" 23 . . . . .	—	1	" 40b. . . . .	—	1
" 24 . . . . .	1	—	" 41a. . . . .	2*	—
" 25a. . . . .	2*	—	" 41b. . . . .	—	2*
" 25b. . . . .	—	2*	" 42 . . . . .	2*	2*
" 26 . . . . .	2*	—	" 44 . . . . .	2*	2*
" 30 . . . . .	1 2*	—	" 47 . . . . .	2*	2*
" 31 . . . . .	—	1 2*	" 48 . . . . .	2*	2*
" 32b. . . . .	2*	2*	Total . . . . .	22	
" 392, 32 and 33 . . . . .	2*	2*		22	
Total . . . . .	22			22	

\* May extend over more than one term.

## TWO YEAR SPECIAL COURSE

Leading to the Certificate of Proficiency in Architecture.

FIRST YEAR.		SECOND YEAR.	
Subject No.	Unit Values.	Subject No.	Unit Values.
Arch. 3	2	Arch. 13*	2
" 4	2	" 19	2
" 7	1	" 21	5
" 9	1	" 22	6
" 11	4	" 32b or a	2½
" 13*	1	" 40a	1
" 16	1	" 25a and b	1
" 17	4	" 41a and b	1
" 23	1	" 42	1
" 24	1	" 47	1
" 26	1	" 48	1
" 31	1½		
" 32a or b	1		
" 30a}			
" 33}	1		
" 34}			
First Year Units	22½	Second Year Units	22

\*A total of three units; latter part of first year and first part of second year.

## THE FULL COURSE

Leading to the Degree of Bachelor of Science in Architecture.

The requirements for admission to this course are: English A and B; History A, B, C, D (any two of these four); Mathematics A, C, D; French A, or German A, and Physios A. *It is strongly recommended that French be the language offered.* For details, see pp. 75 to 100.

## ARCHITECTURAL SUBJECTS.

## PROFESSIONAL PRACTICE AND ETHICS.

Title of Subject.	Hours per week.	Unit Value of Subject.*	Subject Number.	For description see page
Professional Practice	I	I	47	181
Special Lectures	I	I	48	181

\* A unit of work consists of one lecture or recitation, with preparation, each week for one year, or its equivalent in actual time in drafting room, studio or laboratory ( $\frac{1}{2}$  hours).

## DESIGN.

Title of Subject.	Hours per week.	Unit Value of Subject.	Subject Number.	For description see page
Elements of Architecture }				
Design, Grade I .....	8	1 & 3	3	178
" Grade II .....	15	4	11	179
" Grade III .....	15	3	13	179
" Grade IV .....	22	5	21	179
" Grade V .....	27	6	22	179
" Grade VI .....	36	10	36	180
" Grade VII .....	36	5	38	180

## BUILDING CONSTRUCTION.

## ARCHITECTURAL.

Title of Subject.	Hours per week.	Unit Value of Subject.	Subject Number.	For description see page
Carpentry*	1	1	32a	180
Masonry and Iron Work*	1	1	32b	180
Mechanics of Architectural Construction .....	3†	1½	30	180
Graphic Statics in Architecture...	3†	1½	31	180
Hygiene .....	1§		392	222
Heating and Ventilation .....	1§		33	180
Plumbing and Drainage .....	1§		34	180

\* Given in alternate years; 32b in 1908-09; 32a in 1909-10.

† 1st term.

‡ 2d term.

§ 10 lectures each.

## HISTORY.

Title of Subject.	Hours per week.	Unit Value of Subject.	Subject Number.	For description see page
Ancient and Medieval .....	6*	4	17	179
Renaissance and Modern .....	6†	2	19	179
History of Painting .....	1	1	44	181

\* 2 hours lecture, 4 hours research.

† 2 hours lecture, 4 hours research, 1st term only.

## THE OPTION IN ADVANCED BUILDING CONSTRUCTION.

This Option may be substituted for fourth-year subjects 36, 38, 40, 41, 42, and 44. It comprises those subjects usually comprehended under the term "Architectural Engineering."

Title of Subject.	Hours per week.	Unit Value or Subjects.	Subject Number.	For description see page
Architectural Construction: Design	26	6	60A	182
Arch'tl Const'n: Design—Thesis . .	26	6	60B	182
Architectural Construction: Theory	6*	4	60C	182
Foundations of Buildings . . . . .	3†	1	60D	182
Spec. Estimates and Contracts . . .	3†	1	60E	182
Materials of Construction . . . . .	3‡	1½	141	192
Testing Laboratory(Iron, Steel, etc.)	3‡	1	143	192
Testing Laboratory (Cements) . . . .	3¶	1	142	192

\* 1 hour lecture, 5 hours drawing.

† 1 hour lecture, 2 hours drawing, 1st term.

‡ 1 hour lecture, 2 hours research and writing, 2d term.

§ 2d term.

¶ 1st term.

## DRAWING.

Title of Subject.	Hours per week.	Unit Value of Sub-jct.	Subject Num-ber.	For de-scription see page
<i>Architectural Drawing</i> . . . . .	12	1	1	178
Instrumental . . . . .			1a	178
Pencil . . . . .			1b	178
Brush . . . . .			1c	178
Lettering . . . . .			1d	178
<i>Graphics</i> —				
Descriptive Geometry . . . . .	6	2	6	179
Shades and Shadows . . . . .	6	1	7	179
Perspective . . . . .	6	1	9	179
<i>Freehand Drawing</i> —				
Pure Freehand; eight grades, as follows:				
I. Form and Proportion . . . . .	4	1	2a	178
II. Cast; Light and Shade . . . . .	4	1	2b	178
III. Cast; Arch'tl Ornament . . . . .	4	1	15	179
IV. Cast; Figure Details . . . . .	4	1	16	179
V. Antique . . . . .	4	1	24	179
VI. Historic Ornament . . . . .	4	1	23	179
VII. Life . . . . .	4	1	40a	181
VIII. Life . . . . .	4	1	40b	181
Pen and Ink Rendering; two grades, as follows:				
I. Preliminary Studies . . . . .	2	1	26	180
II. Applied Work . . . . .	2	1	42	181
Water Color Drawing, four grades, as follows:				
I. Still Life, Monochrome . . . . .	3	½	25a	179
II. Still Life, Color . . . . .	3	½	25b	179
III. Rendering of Architectural object . . . . .	3	½	41a	181
IV. Rend'g of Phot. subject . . . . .	3	½	41b	181

NOTES.—1. The student must continue pure freehand drawing until his completion of design. If Grade VIII of the former is finished before the latter, drawing from the life will thereupon become an essential part of the work in design.

2. Any student who completes Grade II of design before his class finishes 7 may enter Grade III if his work in Grade II has shown a satisfactory working knowledge of 7. This applies also to the entering of Grade IV with respect to 9.

## NON-ARCHITECTURAL SUBJECTS.

## FIRST YEAR.

Title of Subject.	Lect. or Rec. per week.		Unit Value of Sub- ject.	Subject Num- ber.	For de- scription see page
	1st Term.	2d Term.			
<i>English</i> —					
Composition .....	2	2	1	231	199
Language .....	—	2	1	232	199
Literature .....	2	—	1	234	200
<i>French*</i> —					
Elementary (elective)...	4	4	4	281	206
Reading .....	2	2	2	282A	206
Composition .....	1	1	1	282B	206
<i>Or German*</i> —					
Elementary (elective)...	4	4	4	321	212
Reading .....	2	2	2	322A	212
Composition .....	1	1	1	322B	212
<i>Mathematics</i> —					
Trigonometry .....	3	—	1½	482	229
Analytical Geometry ...	—	3	1½	480	229
<i>Chemistry</i> —					
General Inorganic .....	1	1	2	91	188
	(Lab. 3)	(Lab. 3)			

## SECOND YEAR.

<i>English</i> —					
Composition .....	1	1	1	235	200
Literature .....	2	—	1	233	200
Literature .....	—	2	1	257	201
<i>French*</i> —					
Reading .....	2	2	2	283A	206
Composition .....	1	1	1	283B	206
<i>Or German*</i> —					
Dramas .....	2	—	1	323A	212
Prose .....	—	2	1	323B	212
Composition .....	1	1	1	323C	212
<i>Mathematics</i> —					
Calculus .....	2	2	2	487	230

\* One only of these languages is required, it being strongly recommended that French be taken. When German must be presented for admission, Elementary French may be taken in the first year of the course, followed by 282 a and b, and 283 a and b in the second and third years respectively.

## THE GRADUATE YEAR IN ARCHITECTURE

Leading to the Degree of Master of Science in Architecture.

Title of Subject.	Hours per week.	Unit Value of Subject.	Subject Number.	For description see page
Design .....	30	15	51	182
Freehand Drawing; Life.....	4	2	53	182
Architectural Rendering in Color ..	5	2	55	182
History of Arch.; Research and Conference .....	5	2	57	182
Fine Arts, History or Theory; Research and Conference .....	3	1	59	182

## THE SPECIAL COURSE \*

Leading to the Certificate of Proficiency in Architecture.

This course comprises technical subjects of the full course as follows:

Drawing—7, 9, 16, 23, 24, 25a, 25b, 40a, 41a and b, 26 and 42.

History and Practice—17, 19, 47 and 48.

Building Construction—31, 32a, 32b, 392, 33, and 34.

Design—3, 4, 11, 13, 21 and 22.

For a description of these subjects and their unit values see pages 134 to 138 inclusive.

\* Special students who have presented entrance Mathematics (A, C, D and E) may attend classes in Mechanics of Architectural Construction (30) as auditors while those who have had the mathematics of the full course (480, 482 and 487) may elect and receive credit for this subject.

**SCHEDULE OF THE COMBINED COURSES IN ARTS AND  
ARCHITECTURE.**

(Concluded on following page.)

Providing for their completion in six years; the degree of A. B. being conferred at the close of the fourth year, and that of B. S. in Architecture two years later.

	FIRST YEAR. Freshman Year in Arts.		SECOND YEAR. Sophomore Year in Arts.		THIRD YEAR. Junior Year in Arts. Freshman Year in Architecture.		
	Subject.	No.	Subject.	No.	Subject.	No.	
REQUIRED SUBJECTS.	Math.* . .	$\left\{ \begin{array}{l} 461 \\ \text{and} \\ 482 \end{array} \right\}$	2 $\frac{1}{2}$	Greek . . .	331	3	Freshman Archi- tectural Sub- jects . . . . .
	Latin . . .	$\left\{ \begin{array}{l} 431 \\ 432 \end{array} \right\}$	3	English . . .	$\left\{ \begin{array}{l} 233 \\ 235 \\ 257 \end{array} \right\}$	3	II
	English . . .	$\left\{ \begin{array}{l} 231 \\ 232 \\ 234 \end{array} \right\}$	3	Logic and . . .	561	2	(See footnote.)†
	History . . .	363	2	Ethics . . .	562	2	
	Chemistry . . .	91	2	Physics . . .	601	2	
Required Units	.....	12 $\frac{1}{2}$	.....	.....	10	.....	II
GROUP WORK and FREE ELECTIVES .	Number of Units needed . . . . .	6	Number of Units needed . . . . .	10	Third Year** . . .	10	
Total Units in Year . . . . .	.....	18 $\frac{1}{2}$	.....	.....	20	.....	21

\*These two subjects, and Mathematics 480 and 487, are required for the degree in Architecture.

†It is advised that the Freehand Drawing of the third and fourth years—2 units each—be transferred to first and second years.

**SCHEDULE OF THE COMBINED COURSES IN ARTS AND SCIENCE  
AND IN ARCHITECTURE.**

(Concluded from preceding page )

Detailed information concerning the course in Arts and Science is given on pages 118, 119 and 120, and concerning the course in Architecture on pages 127 to 132.

<b>FOURTH YEAR.</b> Senior Year in Arts. Sophomore Year in Architecture.		<b>FIFTH YEAR.</b> Junior Year in Architecture.		<b>SIXTH YEAR.</b> Senior Year in Architecture.		
	Units		Units		Units	
Sophomore Ar- chitectural Subjects .....	13	Junior Architec- tural Subjects	21	Senior Architec- tural Subjects	21	
						REQUIRED SUBJECTS.
.....	13	.....	21	.....	21	Required Units
Fourth Year**..	8					GROUP WORK and FREE ELECTIVES.
.....	21	.....	21	.....	21	Total Units in Year.

\*\* In the third and fourth years, 18 units in Group and Free Elective subjects are needed, and are best distributed as here shown.

THE COURSES IN MECHANICAL AND IN ELECTRICAL  
ENGINEERING.

OFFICERS.

CHARLES C. HARRISON, LL. D., *Provost.*

EDGAR F. SMITH, PH. D., Sc. D., LL. D., *Vice-Provost.*

JOSIAH H. PENNIMAN, PH. D., LL. D., *Dean of the College.*

HENRY W. SPANGLER, M. S., Sc. D., *Dynamical Engineering: Professor in Charge.*

J. VERNE STANFORD, B. S., M. E., *Mechanical Engineering.*

PAUL R. LOOS, B. S. in M. E., *Mechanical Engineering.*

KARL NIBECKER, B. S. in M. E., *Mechanical Engineering.*

JOHN L. JONES, M. E., *Mechanical Engineering.*

STANLEY G. CHILD, B. S. in E. E., *Mechanical Engineering.*

GEORGE L. SMITH, B. S. in M. E., *Mechanical Engineering.*

ELMER BARK, B. S., *Mechanical Engineering.*

KEITH F. ADAMSON, B. M. E., *Mechanical Engineering.*

---

HENRY E. EHLLERS, B. S. in M. E., *Experimental Engineering.*

GEORGE E. CROFOOT, B. S. in M. E., *Mechanical Engineering.*

PERRY J. FREEMAN, B. S. in M. E., *Mechanical Engineering.*

LLOYD A. SAGENDORPH, B. S. in M. E., *Mechanical Engineering.*

JULIAN C. SMALLWOOD, M. E., *Mechanical Engineering.*

ARTHUR F. BARNES, B. S., *Mechanical Engineering.*

---

WORRAL E. S. TEMPLE, B. S. in E. E., *Electrical Engineering.*

WILLIAM S. RICHHART, B. S. in E. E., *Electrical Engineering.*

ELMER E. BRACKETT, B. S. in E. E., *Electrical Engineering.*

HAROLD C. BICKFORD, B. S. in E. E., *Electrical Engineering.*

WILLIAM J. POLLOCK, B. S. in E. E., *Electrical Engineering.*

WINFIELD D. BEARCE, B. S. in E. E., *Electrical Engineering.*

JOHN O. KAMMERMAN, B. S. in E. E., *Electrical Engineering.*

HAROLD C. BARTHOLOMEW, M. E. in E. E., *Electrical Engineering.*

---

HORACE P. FRY, B. S. in E. E., *Mechanical Drawing.*

JOSEPH H. STANNARD, JR., *Mechanical Drawing.*

ROBERT E. SMITH, M. E., *Mechanical Drawing.*

GEORGE H. SMITH, M. E., *Mechanical Drawing.*

HARRISON D. BATES, JR., *Mechanical Drawing.*

WILLIAM J. MICHENER, *Mechanical Drawing.*

JOHN J. MORRIS, *Superintendent of Shops.*  
WILLIAM MELLOR, *Wood-working.*  
NEAFIE E. SUTPHEN, *Wood-working.*  
GEORGE W. H. FAWKES, *Wood-working.*  
WILLIAM A. BOURN, *Wood-working.*  
PERCIVAL R. HALL, *Iron-working.*  
ROBERT H. KREWSON, *Iron-working.*  
SAMUEL APPLIN, *Iron-working.*  
EDWARD M. LAWLEY, *Iron-working.*  
CHARLES W. BLOEMKER, *Forging.*  
JOHN F. MURPHY, *Iron Founding.*

The course in Mechanical Engineering covers a period of four years, and leads to the degree of Bachelor of Science in Mechanical Engineering.

The course in Electrical Engineering covers a period of four years, and leads to the degree of Bachelor of Science in Electrical Engineering.

Graduates of either of these courses who continue in the practice of their profession receive the appropriate technical degree three years after the Bachelor's degree has been conferred, upon presentation of an acceptable thesis. (See p. 107.)

New students are admitted to advanced standing, provided they have pursued similar courses elsewhere.

The tuition fee for the courses in Mechanical and in Electrical Engineering is two hundred dollars (\$200.00) a year.

#### METHOD AND EQUIPMENT.

The technical instruction in the class room is carried on chiefly with the aid of text-books, lectures being given only for the purpose of supplementing these. For recitation purposes, the classes are divided into small sections, ordinarily of ten or twelve men, so that a student gets as much individual instruction as though the class were small.

Students taking Electrical Engineering are given more extended instruction in electrical subjects than those taking Mechanical Engineering, although exactly the same fundamental work is covered in both divisions of the department, the differentiation occurring in the last two years of the course. The object of the instruction in both departments is to give the students such a fundamental knowledge of the apparatus and methods used in

developing, transmitting and utilizing power, that they will be able to take up any of the general divisions of Mechanical or Electrical Engineering after graduation.

In the Freshman year, the student is given a short course in engineering nomenclature, thus making him familiar, at the outset of his work, with the names and uses of the various kinds of machinery with which his later instruction will be concerned. In this year descriptive geometry is taught in the drawing room, the student being required to work out, to scale, a definite problem involving the principles which he has studied from the text-book before the meeting of the class.

In the work in Mechanical Drawing in this year a student is first taught the accurate and careful use of his instruments, and the principles of projection; and Mechanical Drawing proper is not taken up until this work has been made as thorough and efficient as possible. Each drawing made by the student during his course goes into the hands of a checker whose business it is to examine every line carefully, and see that the drawing is up to the standard that would be required in an industrial establishment. The exercises are carefully graded, so that the maximum of instruction is obtained in the shortest time.

The shop work begins in the first year, and is completed by the end of the second. The educational idea is paramount in the work, and the needs of the individual student are carefully studied. The work done is entirely individual, the exercises being so selected that a new thought or a new method is embodied in each piece of work done by the student. This work is supplemented by outside reading carefully selected to cover those points which broaden a student's view of the work being done, and monthly written examinations are held in which the problems presented cover the principles that have been studied by the student during the preceding month.

During the Freshman year the work in mathematics, physics, chemistry and languages is carried on in other buildings of the College for the purpose of laying a broad foundation for the student's later technical work.

In the second year, a theoretical course in kinematics is given which is followed by practical problems in the drawing room in the following year. The work done in the shops in the second year is of a more advanced character, being devoted largely to machine processes, pattern making and foundry work.

In the drawing room the technique of Mechanical Drawing is

thoroughly covered, the work being so selected that a student has a satisfactory knowledge of the methods of reading and constructing mechanical drawings. The last half of the year is devoted to sketching. One of the pieces of machinery in the laboratory or shop, after being examined by the class, is taken apart and detailed working sketches are made.

During the last two years of the course, the work is mostly technical, the mathematics, physics and chemistry having been completed by the end of the second year.

Broad theoretical and practical courses in mechanics of materials, hydraulics, hydrostatics and graphic statics, and in electrodynamics, direct and alternating currents, are given in the third year of the course. These are almost exclusively taught in the class room, and the work is largely individual work by the students. In graphic statics the work is largely in the drawing room. Students are assigned certain portions of text-books for reference, and practical problems are assigned and worked out on the drawing board.

The work in drawing covers the making of tracings from the sketches made in the preceding year, work in kinematic design and a complete original design, bringing in as much of the preceding theoretical work as possible.

In hydrodynamics the principles of applied mechanics are extended and made practical by class work, supplemented by design work in the drawing room, which covers the calculating and preparation of drawings for turbines.

The work in steam engineering covers the subject of thermodynamics and its subsequent application to steam and gas engines and refrigerating machines, etc., and strong courses are provided in steam engine and steam boiler design.

In Electrical Engineering the course covers work in elementary electrodynamics, both direct and alternating, and its application to more advanced problems. A strong class room course in electrical measurement and problems parallels the laboratory work in this subject. The elementary ideas of electrical magnetism are carefully reviewed, and the work is completed by a course in dynamo design.

The Laboratory work in both Electrical and in Mechanical Engineering is done according to a well considered schedule. The student is assigned a problem, a week or more in advance, and is expected to come to the laboratory prepared to do the work assigned. Practically all the work is individual work, one student only being assigned to an experiment at a time. The results of the experiment

are reported, the student making his own observations and calculations, and writing out in detail exactly the work that has been done, and the results obtained. The number of students under one instructor is so limited that the work is carefully supervised.

Short courses in naval architecture and marine engines are provided for students who may be interested.

Members of the senior class are required to visit various industrial establishments in Philadelphia, a large number of which have freely opened their doors to the students of the department. These visits are made in groups of two students, who are assigned certain definite engineering subjects for investigation, and written reports on these subjects are required from each student.

The work in the various divisions has been carefully balanced, so that a student gets a well-rounded and well-balanced technical education.

#### EQUIPMENT.

The drawings rooms are so arranged that there is a separate room for each class, there being 101 desks in the Freshman room, 93 in the Sophomore, 75 in the Junior, and 46 in the Senior. In the upper classes, one student is assigned to a desk, and in the lower classes, not over two. The drawing tables are well made, of wood, and furnished with a drawer for instruments, a closet large enough to hold three boards, and a stool. The small apparatus which the student is not required to have, such as protractors, beam-compasses, tinting outfits, etc., are provided by the department. An electric blue printing outfit makes it possible to provide the great number of prints required in the drawing room and other divisions of the work. The rooms are admirably lighted, both for day and night work. These rooms are available for study purposes at all times during the day.

The mechanical laboratory is located on the first floor, all the machines having their foundations directly on the ground. For hydraulic work a large tank in the attic with a cistern under the floor, and a large service pump furnish an abundant supply of water. Turbine and pump testing is provided for, the water used being measured over weirs. Meters of all the usual types are provided for testing, together with hydraulic rams, tanks, pitot tube and scales, so that a student is familiarized with all the practical methods of measuring and using water in large and small quantities.

Materials of construction are tested on a number of testing machines equipped so that the work can be accurately and quickly

completed, there being five machines of the usual type, and two torsion machines.

Gas engine testing is provided for by a series of gas engines of different makes, running on city gas, and one installed with a producer for making the gas which it uses. These engines are completely equipped with brakes, indicators, counters, etc., so that thorough and careful tests can be conducted on them all at the same time.

A 100 H. P. high pressure boiler adjacent to a special testing floor enables the student to do the routine boiler testing and permits of apparatus requiring steam of 250 pounds pressure being handled on the adjacent floor.

A small ammonia refrigerating plant with ice box and cold storage has been installed, so the student has an opportunity to do the usual work required in testing a plant of this kind.

A fan blower with heating coil driven by either a steam engine or an electric motor is installed so that tests on plants of this sort can be made.

The steam engine plant consists of numerous engines, from simple slide valve machines to a compound automatic cutoff engine, and includes engines of all the various types of both high and slow speed. The simpler engines are fitted for valve setting, determining mechanical efficiency, taking indicator cards, etc., while the more complex ones are fitted for making complete heat analyses, being fitted with condensers, air pumps, etc., for the purpose. The hot water from these machines, together with that from the DeLaval turbine, is sent from the hot well through a cooling tower into the laboratory supply after being cooled.

The laboratory has also injectors, dynamometers, and a good equipment of all the smaller apparatus that an engineer has occasion to use.

A special room is set apart for testing gauges, planimeters, indicators, coal, flue gases, and for making the many small tests required of the engineer. A complete outfit for micro-photography of iron and steel is part of the equipment.

The electrical laboratories occupy practically six separate divisions. Two are used for instrumental work by the Juniors, each of which will accommodate twelve men. Two are used for more advanced work, of the same kind with the Seniors, and will accommodate nine men each. The apparatus supplied to these laboratories will permit of the entire 42 men working on individual work at the same time without interference. In all parts of these laboratories,

direct current of high and low voltage with large current capacities is available, special switch boards and storage batteries having been installed for each division. Alternating current is available in the Senior Laboratories.

The direct current dynamo and motor laboratory is in a separate division, there being twelve separate equipments of various types for testing. The machines are mounted on bases, but are not connected up for students' use, as in each case the proper connection and starting of the plant is part of the experiment. Five dynamo testing plants and six for motor testing are provided, together with a plant for the Hopkinson test. The large equipment of small instruments for this laboratory enables all the apparatus to be in service at the same time.

The alternating current laboratory is located on the second floor and the same attention has been paid to the details of the installation as in the direct current laboratory. Alternating current generators for tests are driven by direct current motors. Two-phase and three-phase work is provided for by special motor-generators wired to the working tables. Provision is also made for testing transformers, arc lights, and for doing vector work. Two photometers have been installed in separate dark rooms in this laboratory.

An additional room has been set apart as an electrical standard room to be used for the accurate calibration of the electrical instruments used for test purposes in the laboratory. A storage battery room and special alternating current generators provide voltages and currents of large range for the work being done here.

The shops consist of a forge shop, foundry, iron-working and pattern shops. The forge shop has nine down-draft forges and a larger one to use with the steam hammer; punch, shears, drill press and pipe cutting machines are part of this equipment. The foundry has a cupola, two brass furnaces, core machine, sifter, sprue cutter and the usual small tools, together with nine molders' troughs. A large pit in the floor is used for bedding-in and for a casting bed. The iron-working shop has a large equipment of the usual iron-working tools, well selected, as examples of the types in common use, and varying in size from small spinning lathes to large motor-driven lathes and planer. Milling machines, grinding machines, drill presses, and a large assortment of smaller tools are in the equipment. Each student is assigned a kit of small tools which are his to use and keep in order as long as he works in this department.

The wood shop has a complete outfit of wood-working tools, so that as soon as a student develops some skill, his work becomes pattern making and every facility is provided for getting out the work rapidly and accurately.

As the shop work is entirely individual, the plant installed has been made so complete that every operation required is amply provided for, and there are during the current year, in addition to the superintendent in charge of the shops, one instructor in forge work, one in foundry work, three in iron work, and three in wood work.

### THE COURSE IN MECHANICAL ENGINEERING.

The requirements for admission to this course are: English A and B; History A, B, C, D (any two of these four); Mathematics A, C, D, and E; Physics A; and French A, or German A. For details, see pp. 82-100.

This course leads to the degree of B. S. in Mechanical Engineering at the end of the Senior year. The technical degree of M. E. is conferred under the provisions stated on page 107.

### FRESHMAN CLASS.

Subjects.	Number of hours a week.		For a brief description, see	
	1st Term	2d Term	page	number
Descriptive Geometry .....	2	2	234	491
Elementary Drawing .....	3	3	234	492
Steam Engine .....	—	2	235	495
Shop Work .....	6	3	235	500
English Composition .....	1	1	199	232
English Language .....	2	—	199	232
English Literature .....	—	2	200	234
French .....	{ one only }	3	206	282
German .....		3	212	322
Trigonometry .....	4	—	229	483
Algebra .....	—	4	229	481
Physics .....	2	2	244	618
Chemistry .....	4	4	188	91

## SOPHOMORE CLASS.

Subjects.			Number of hours a week.	For a brief description, see
	1st Term.	2d Term.	page	number
Mechanical Drawing and Sketching . . . . .	3	3	235	493
Kinematics . . . . .	3	—	235	496
Advanced Shop Work . . . . .	6	6	225	502
English Composition . . . . .	1	—	200	235
English Literature . . . . .	—	2	200	233
French . . . . .	3	3	206	288
German . . . . .	{ one only required }		3	212
Analytic Geometry . . . . .	{ }		229	484
Calculus . . . . .	5	5	230	485
Physics . . . . .	3	—	244	619
Analytic Mechanics . . . . .	—	4	244	602
Chemistry (Qualitative) . . . . .	4	4	188	92

## JUNIOR CLASS.

Working Drawings, Kinematic Design . . . . .	3	3	235	494
Statics . . . . .	3	2	235	497
Hydraulics . . . . .	—	3	235	498
Graphics . . . . .	5	—	236	508
Thermodynamics . . . . .	—	3	236	509
Mechanical Laboratory . . . . .	3	3	236	511
Electrodynamics . . . . .	2	2	237	521
Alternating Currents . . . . .	2	2	237	523
Electrical Laboratory . . . . .	3	6	237	529
Analytic Mechanics . . . . .	2	—	244	626
Metallurgy . . . . .	—	2	210	311

## SENIOR CLASS.

Subjects.	Number of hours a week.		For a brief description, see	
	1st Term	2d Term	page	number
Hydrodynamics . . . . .	2	2	235	499
Engine Calculations . . . . .	2	—	235	504
Engine Design . . . . .	—	2	235	505
Boiler Calculations . . . . .	2	—	236	506
Boiler Design . . . . .	—	2	236	507
Applied Thermodynamics . . . . .	2	2	236	510
Advanced Mechanical Laboratory . . . . .	6	3	236	514
*Marine Engines . . . . .	1	1	236	515
*Naval Architecture . . . . .	1	1	236	516
Machine Design . . . . .	3	3	236	517
Shop Visits . . . . .	3	—	236	518
Specifications . . . . .	—	1	237	519
Thesis . . . . .	—	9	237	520
Advanced Electrodynamics . . . . .	3	—	237	524
Electrical Measurements . . . . .	2	—	237	525
Electricity and Magnetism . . . . .	—	2	237	528
Electrical Testing . . . . .	3	—	238	531
Business Law . . . . .	1	1	263	205

\* Alternate years. 516 omitted in 1909-10.

## THE COURSE IN ELECTRICAL ENGINEERING.

## ADMISSION AND DEGREES.

The requirements for admission to this course are the same as for the course in Mechanical Engineering. (See page 149.)

This course leads to the degree of B. S. in Electrical Engineering at the end of the Senior year. The technical degree of E. E. is given under the provisions stated on page 107.

## FRESHMAN CLASS.

Same as course in Mechanical Engineering. (See page 149.)

## SOPHOMORE CLASS.

Same as course in Mechanical Engineering. (See page 150.)

## JUNIOR CLASS.

Subjects.	Number of hours a week,		For a brief description, see	
	1st Term	2d Term	page	number
Working Drawings, Kinematic Design . . . . .	3	3	235	494
Statics . . . . .	3	2	235	497
Hydraulics . . . . .	—	3	235	498
Graphics . . . . .	5	—	236	508
Thermodynamics . . . . .	—	3	236	509
Mechanical Laboratory . . . . .	3	3	236	511
Electrodynamics . . . . .	2	2	237	521
Telegraphy and Telephony . . . . .	2	2	237	522
Alternating Currents . . . . .	2	2	237	523
Electrical Laboratory . . . . .	3	6	237	529
Analytic Mechanics . . . . .	2	—	244	626

## SENIOR CLASS.

Subjects.	Number of hours a week.		For a brief description, see	
	1st Term	2d Term	page	number
Hydrodynamics . . . . .	2	2	235	499
Engine Calculations . . . . .	2	—	235	504
Boiler Calculations . . . . .	2	—	236	506
Applied Thermodynamics . . . . .	2	2	236	510
Advanced Mechanical Laboratory . . . . .	3	3	236	513
Machine Design . . . . .	3	3	236	517
Shop Visits . . . . .	3	—	236	518
Specifications . . . . .	—	1	237	519
Advanced Electrodynamics . . . . .	3	—	237	524
Electrical Measurements . . . . .	2	—	237	525
Dynamo Design . . . . .	—	2	237	526
Alternating Current Applications . . . . .	2	2	237	527
Electricity and Magnetism . . . . .	—	2	237	528
Electrical Testing . . . . .	6	—	238	532
Thesis . . . . .	—	9	238	533
Business Law . . . . .	1	1	263	205

## THE COURSE IN CIVIL ENGINEERING.

## OFFICERS.

CHARLES C. HARRISON, LL. D., *Provost*.  
 EDGAR F. SMITH, PH. D., Sc. D., LL. D., *Vice-Provost*.  
 JOSIAH H. PENNIMAN, PH. D., LL. D., *Dean of the College*.  
 EDGAR MARBURG, C. E., Sc. D., *Civil Engineering: Professor in Charge*.  
 WILLIAM EASBY, JR., C. E.,  
 EDWARD L. INGRAM, C. E.,  
 HERMAN C. BERRY, A. B., B. S. in C. E.,  
 WILLIAM C. H. SLAGLE, C. E.,  
 EDWARD T. GRANDLIENARD, B. S., C. E.,  
 LOUIS S. BRUNER, B. S. in C. E.,  
 OTHO M. GRAVES, B. S.,  
 ALBERT M. GREGORY, B. S. in C. E.,  
 HENRY W. TROELSCH, B. S. in C. E.,  
 ALFRED D. WOLFF, JR., B. S. in C. E.,  
 HOWARD E. PHELPS, B. S. in C. E.,  
 THOMAS A. H. TEETER, B. S. in C. E.,  
 JULIUS ADLER, B. S. in C. E.,  
 ANDREW K. ARMSTRONG, B. S. in C. E.,  
 GEORGE ROSENGARTEN, B. S. in C. E.,  
 SYDNEY S. WALKER,

} Civil  
Engineering.

The course in Civil Engineering extends over a period of four years, and leads to the degree of Bachelor of Science in Civil Engineering.

The tuition fee is two hundred dollars (\$200.00) a year. Graduates who continue in the practice of their profession may receive the technical degree of Civil Engineer under the provisions stated on page 107.

The requirements for admission to this course are: English A and B; History A, B, C, D (any two of these four); Mathematics A, C, D, E; Physics A; and German A, or French A. For details, see pp. 82-100.

## METHODS AND EQUIPMENT.

The course in Civil Engineering is designed to meet, as thoroughly as practicable, the demands of modern engineering practice. The studies are sufficiently advanced and comprehensive to ensure to the graduate that broad technical training essential to the successful prosecution of his subsequent professional work.

Text-books are used in general as a basis of instruction. Supplementary matter is given by lectures and in the form of notes. The aim is to keep the class work intimately in touch with the methods of current practice.

The equipment of surveying instruments includes two theodolites reading to single seconds by micrometer microscopes, two triangulation and one city transit reading to twenty seconds, fourteen engineers' transits, two precise levels, four dumpy levels, eight wye levels, four plane tables, four compasses, four sextants, and a large assortment of miscellaneous instruments such as mercurial and aneroid barometers, prismatic compasses, pocket sextants, clinometers, passometers, hand levels, planimeters, level triers, pantograph, curvograph, trigonometer, collimator, slide rules, railroad curves, tape testing apparatus, stadia sketching tables, stadia and level rods, etc.

After the students have been made familiar with the adjustment and use of the various instruments, complete surveys are undertaken. During the first term a farm survey is made, in connection with the regular weekly field practice. During the summer, two entire weeks are devoted to a topographic and hydrographic survey, and a like period to the survey of a railroad line. The data collected in the field serve as a basis for subsequent class-room instruction in the preparation of drawings and estimates.

The courses in the Theory of Stresses are supplemented by courses covering the practical application of the principles involved. Complete designs, accompanied by detail drawings, are made of a plate-girder and a pin-connected truss bridge. Similarly, the courses in the Theory of Hydraulics, Sanitary Engineering, Railroad Engineering, and Masonry are followed by courses in the general design of a distributing system for a municipal water-supply; the sewerage of a town; the elements of the design of railroad yards, terminals and track details; and the design of masonry structures.

The instruction relating to the Materials of Construction is supplemented by work in the Civil Engineering Testing Laboratories.

The largest machine in these laboratories has a capacity of 600,000 pounds. It is an Olsen vertical four-screw machine, of the universal type, capable of receiving a column twenty-four feet long, provided with beam extensions below the floor level twenty-one feet long designed for a load of 200,000 pounds on a span of twenty feet.

The remaining equipment consists of a 200,000-pound Olsen three-screw universal machine with beam extensions thirteen feet

long, a 100,000-pound Olsen machine, two 30,000-pound Olsen machines, one 30,000-pound Falkenau-Sinclair machine, one 60,000-inch-pound torsion machine, an autographic pendulum torsion machine of the Thurston-Riehlé type, a 10,000-pound transverse machine, a cold-bend machine, capable of bending a steel bar one square inch in section, and a 15,000-pound wire-testing machine adapted also for receiving compression specimens up to a length of three feet. With the exception of the transverse, the wire-testing, and the pendulum-torsion machines designed for hand-operation, all of these machines are driven by independent electric motors.

These laboratories are further equipped with a great variety of special apparatus including two beam fiber extensometers; a Henning recorder, a Johnson, and a Ewing extensometer, the latter reading to 1-50,000 of an inch; an Olsen compressometer reading to 0.0001 inch, two deflectometers, a set of calibrating levers, standard weights, shearing apparatus for iron, steel and timber, besides a large assortment of micrometers, calipers, speed indicators, and tools for the preparation and marking of specimens.

The Lesley Cement Laboratory is fully equipped for testing cement, sand, and plain and reinforced concrete. It contains a number of slate-top mixing tables each provided with a damp closet and scales.

The testing apparatus in this laboratory consists of an Olsen and a Riehlé machine of the lever type, a Fairbanks and a Falkenau-Sinclair machine of the shot type, and a 50,000-pound hand-power hydraulic machine for compression tests. It is further equipped with an Olsen mechanical briquette-molding machine; a Howard and Morse automatic sieve apparatus for cement and sand; a Bauschinger expansion apparatus, apparatus for accelerated tests; nine soap-stone immersion tanks; cement bins, briquette racks, and a very complete outfit of smaller apparatus including balances, specific gravity apparatus, sieves, burettes, briquette molds, etc.

Special provision is made for work in concrete, including molds for beams up to 13 feet long and a concrete immersion tank of suitable capacity for receiving these beams, a beam crane for their convenient handling and transportation, a concrete block for molding compression specimens, storage bins for stone, sand, etc.

The brick laboratory contains two rattlers for testing paving brick, which may be operated singly or jointly by an electric motor.

A large and well-equipped laboratory is provided for experimental work in hydraulics. The most important features of the installation are as follows:

A concrete reservoir of 23,000 gallons capacity, which receives the discharge from all apparatus and from which the laboratory supply is drawn by three electrically driven two-stage turbine pumps, each with a capacity of 450 gallons per minute against a head of 165 feet; a vertical circular steel pressure tank,  $5\frac{1}{2}$  feet in diameter and 37 feet high, provided with attachments for orifices and other apparatus, a 12-inch standpipe 65 feet high, with overflows to regulate the static head, circuits of 10-inch pipe, with numerous openings for the attachment of minor apparatus, connected with the stand pipe and with the pressure tank, and two concrete weir tanks, each 34 feet long and 5 feet wide, which may be used also for measuring tanks. The latter may be converted into canals by opening the gates below the weir crests, for the purpose of investigating the flow over dams of various profiles. Two steel chutes are provided with valves operated by hydraulic lifts to divert the flow alternately into two weighing tanks each of 16,000 pounds capacity, mounted on weighing cars, for weighing continuously the discharge from any part of the laboratory. The laboratory also contains a 9-inch turbine, a 12-inch reaction wheel, water meters of various types, numerous gages and a great variety of minor apparatus.

A well-equipped machine shop is provided for making and repairing apparatus and for preparing test specimens.

Tours of inspection to manufacturing plants and to engineering works, completed or in course of construction, are made from time to time during the year, but only in so far as they have a direct bearing on the work of the class-room.

During the summer vacation following the Junior year, each student is required to prepare a memoir descriptive of some engineering work or manufacturing plant, based on his direct personal inquiries and observation.

A thesis on a professional subject is required of every candidate for a degree. These theses must embody either a design or a review of an engineering plant, process or structure, or the results of an experimental investigation. They must be fully illustrated by drawings and models when needed, and upon graduation must be deposited with the University.

The department library contains an excellent collection of the most recent technical works, supplementing the very complete collection of bound volumes of engineering journals and of the transactions of engineering societies in the Fairman Rogers collection. The leading technical journals are kept on file.

## THE COURSE IN CIVIL ENGINEERING.

## FRESHMAN CLASS.

Subjects.			Number of hours a week.	For a brief description, see page number
	1st Term	2d Term		
Pen Topography .....	—	2	193	114
Lettering .....	2	—	193	111
Freehand Drawing .....	—	2	193	117
Descriptive Geometry .....	3	3	193	120
Mechanical Drawing .....	4	4	193	112
Trigonometry .....	4	—	229	483
Algebra .....	—	4	229	481
Physics .....	2	2	244	618
English Composition .....	1	1	199	231
English Language .....	—	2	199	232
English Literature .....	2	—	200	234
German .....	{ only one }		212	322
French .....	{ required }		206	282
Chemistry .....	4	4	188	91

## SOPHOMORE CLASS.

Color Topography .....	—	2	193	115
Mechanical Drawing .....	2	—	193	113
Stereotomy .....	2	—	193	121
Surveying, Theory .....	3	—	193	125
Surveying, Practice† .....	3	3*	193	126
Railroad Surveying, Theory .....	—	3	194	127
Railroad Surveying, Practice† .....	—	3*	194	128
English Composition .....	—	1	200	235
English Literature .....	2	—	200	233
German .....	{ only one }		212	327
French .....	{ required }		206	288
Analytical Geometry }	5	5 {	229	484
Calculus .....	—	2	230	485
Analytic Mechanics .....	—	2	244	626
Physics .....	3	4	244	619-02
Chemistry (Qualitative) .....	4	4	188	92

\* For half of the term.

† In addition to the class work two entire weeks, at the end of the second term, are spent in field practice in land and hydrographic surveying, and two weeks in railroad surveying.

## JUNIOR CLASS.

Subjects.	Number of hours a week.		For a brief description, see	
	1st Term	2d Term	page	number
Mechanics of Materials . . . . .	5	—	195	140
Materials of Construction . . . . .	—	3	195	141
Cement Testing . . . . .	3	—	195	142
Materials Testing . . . . .	—	3*	195	143
Graphic Statics . . . . .	—	1	195	145
Framed Structures . . . . .	—	5	195	146
Bridge Design . . . . .	—	2	195	148
Masonry . . . . .	—	3	195	150
Railroad Construction and Maintenance . . . . .	2	—	194	129
Railroad Office Work . . . . .	2	—	194	130
Hydromechanics . . . . .	—	3	194	135
Water-Supplies . . . . .	—	2	194	136
Hydraulic Testing . . . . .	—	3*	194	139
Roads and Pavements . . . . .	1	—	195	155
Map Drawing . . . . .	2	—	193	116
Physical Measurements . . . . .	4	—	244	602
Analytical Mechanics . . . . .	2	—	244	626
Mineralogy . . . . .	2	2	210	306
Business Law . . . . .	1	1	263	205

## SENIOR CLASS.

Materials Testing . . . . .	3*	—	195	143
Framed Structures . . . . .	2	—	195	147
Bridge Design . . . . .	4	4	195	149
Railroad Economics . . . . .	2	—	194	131
Railroad Design . . . . .	2	—	194	132
Geodesy, Theory . . . . .	—	1	194	133
Geodesy, Practice . . . . .	—	3	194	134
Sanitary Engineering . . . . .	2	—	194	137
Hydraulic Works Design . . . . .	5	—	194	138
Hydraulic Testing . . . . .	3*	—	194	139
Masonry Design . . . . .	—	2	195	151
Inspection Tours . . . . .	at hours assigned	195	156	
Thesis . . . . .	6	195	159	
Steam Engines and Boilers . . . . .	2	2	238	540
Applied Electricity . . . . .	2	2	238	539
Astronomy . . . . .	3	—	183	61
Practical Astronomy and Geodesy . . . . .	—	4	183	62
Metallurgy . . . . .	—	2	210	311
Geology . . . . .	2	—	209	299

\* For half of the class.

## THE COURSE IN CHEMISTRY.

## OFFICERS.

CHARLES C. HARRISON, LL. D., *Provost.*

EDGAR F. SMITH, PH. D., Sc. D., LL. D., *Vice-Provost: Chemistry; and Director of the JOHN HARRISON Laboratory of Chemistry.*

JOSIAH H. PENNIMAN, PH. D., LL. D., *Dean of the College.*

OWEN L. SHINN, PH. D.,

WALTER T. TAGGART, PH. D.,

DANIEL L. WALLACE,

THOMAS P. McCUTCHEON, JR., PH. D.,

JOEL H. HILDEBRAND, PH. D.,

JOHN FRAZER, A. M., PH. D.

HIRAM S. LUKENS, B. S.,

GEORGE W. PLUMMER, B. S.,

JACOB S. GOLDBAUM, B. S.,

HEZZLETON SIMMONS, B. S.,

THOMAS E. HUFF, B. S.,

*Chemistry.*

The Course in Chemistry extends over a period of four years, and leads to the degree of Bachelor of Science in Chemistry. The tuition fee is two hundred dollars (\$200.00) a year.

The requirements for admission to this course are: English A and B; History A, B, C, D (any two of these four); Mathematics A, C, D, E; Physics A and either French A, or German A. For details, see pp. 82 to 100.

## METHODS AND EQUIPMENTS.

The work of the first year consists in the execution of a somewhat extended series of experiments upon the metals and non-metals. The student omits only those of greater difficulty, and such as require a skilled manipulator for their performance. In addition, he attends lectures and recitations, and solves numerous examples based upon the various reactions that he conducts practically. The skill and familiarity with chemical methods acquired in this way will fully prepare him for the work of the second year, which is mainly analytical, though considerable time is allotted to the preparation of a selected series of inorganic salts.

In quantitative analysis he is given every opportunity to familiarize himself with purely scientific methods in gravimetric, electrolytic and volumetric analysis; also with gas analysis, the use of the spectroscope, and the methods of technical analysis applied in the various branches of Chemistry. The instruction in Theoretical

Chemistry is given by lectures; that in Applied Chemistry by lectures and laboratory examples, supplemented by frequent visits to chemical plants in Philadelphia and adjacent cities. The lectures and recitations in Organic Chemistry are conducted parallel with practical work upon this subject. The aim is to have the student prepare typical substances from the whole field of Organic Chemistry. The most recent methods of analysis peculiar to this field receive due attention. In the last year the student pursues advanced work in the direction of Pure Inorganic, Organic, or Technical Chemistry. The solution of some problem in one of these branches will constitute the thesis that must be prepared before presenting himself for the final examination.

The JOHN HARRISON Laboratory of Chemistry provides a complete modern equipment for the prosecution of chemical studies, both undergraduate and graduate. A pamphlet containing plans of the Laboratory will be mailed upon application to the Director.

## FRESHMAN CLASS.

Subjects.	Number of hours a week.		For a brief description, see	
	1st Term	2d Term	page	number
General Chemistry .....	18	—	188	91A
Qualitative Analysis .....	—	18	188	92A
Algebra .....	3	—	230	488
Analytic Geometry and Calculus .....	—	3	230	489
German .....	3	3	212	322
French .....	3	3	206	282
English Composition .....	2	2	199	231
English Literature .....	2	—	200	234
English Language .....	—	2	199	232
Freehand Drawing .....	2	2	178	2A
Physics .....	3	3	244	620

## SOPHOMORE CLASS.

Qualitative Analysis .....	18	18	188	92A
English Composition .....	1	1	200	235
English Literature .....	2	2	200	233-57
German .....	3	3	212	323
Scientific German .....	one only		212	328
French .....	required		206	283
Scientific French .....	2	2	206	287
Mineralogy .....	2	2	209	301
Physics .....	4	4	244	602

## JUNIOR CLASS.

Subjects.	Number of hours a week.		For a brief description, see	
	1st Term	2d Term	page	number
Quantitative Analysis .....	13	13	188	93
Organic Chemistry .....	2	2	188	94A
Assaying .....	4	4	189	102
Logic .....	2	—	240	561
German .....	2	2	212	329
French .....	{ one only } required		206	289
English Literature .....	2	2	200	241-40
Mineralogy, Descriptive .....	2	2	209	302
Mineralogy, Determinative .....	2	2	209	303
Metallurgy .....	—	2	210	311
Physics .....	2	2	244	627

## SENIOR CLASS.

Organic Chemistry .....	2	2	188	94B
Practical Organic Chemistry .....	10	10	188	96
Applied Chemistry .....	2	2	188	97
Analysis of Foods .....	9	—	189	98
Theoretical Chemistry .....	1	1	189	99
Electro-Chemistry .....	4	4	189	100
Practical Electro-Chemistry .....	—	9	189	105
Physical Chemistry .....	4	4	189	106
Geology .....	2	2	209	293
Business Law .....	1	1	263	205
English Literature .....	2	2	201	254-5

## THE COURSE IN CHEMICAL ENGINEERING.

## OFFICERS.

**CHARLES C. HARRISON, LL. D., Provost.**

**EDGAR F. SMITH, PH. D., Sc. D., LL. D., Vice-Provost: Chemistry; and Director of the JOHN HARRISON Laboratory of Chemistry.**

**JOSIAH H. PENNIMAN, PH. D., LL. D., Dean of the College.**

**HENRY W. SPANGLER, M. S., Sc. D., Dynamical Engineering.**

**OWEN L. SHINN, PH. D.,**

**WALTER T. TAGGART, PH. D.,**

**DANIEL L. WALLACE,**

**THOMAS P. McCUTCHEON, JR., PH. D.,**

**JOEL H. HILDEBRAND, PH. D.,**

**JOHN FRAZER, A. M., PH. D.,**

**HIRAM S. LUKENS, B. S.,**

**GEORGE W. PLUMMER, B. S.,**

**JACOB S. GOLDBAUM, B. S.,**

**HEZZLETON SIMMONS, B. S.,**

**THOMAS E. HUFF, B. S.,**

**J. VERNE STANFORD, B. S., M. E., Mechanical Engineering.**

**PAUL R. LOOS, B. S. in M. E., Mechanical Engineering.**

**KARL NIBECKER, B. S. in M. E., Mechanical Engineering.**

**JOHN L. JONES, M. E., Mechanical Engineering.**

**STANLEY G. CHILD, B. S. in E. E., Mechanical Engineering.**

**GEORGE L. SMITH, B. S. in M. E., Mechanical Engineering.**

**ELMER BARK, B. S., Mechanical Engineering.**

**KEITH F. ADAMSON, B. M. E., Mechanical Engineering.**

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**HENRY E. EHLERS, B. S. in M. E., Experimental Engineering.**

**GEORGE E. CROFOOT, B. S. in M. E., Mechanical Engineering.**

**PERRY J. FREEMAN, B. S. in M. E., Mechanical Engineering.**

**LLOYD A. SAGENDORPH, B. S. in M. E., Mechanical Engineering.**

**JULIAN G. SMALLWOOD, M. E., Mechanical Engineering.**

**ARTHUR F. BARNES, B. S. Mechanical Engineering.**

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**WORRAL E. S. TEMPLE, B. S. in E. E., Electrical Engineering.**

**WILLIAM S. RICHHART, B. S. in E. E., Electrical Engineering.**

**ELMER E. BRACKETT, B. S. in E. E., Electrical Engineering.**

**HAROLD C. BICKFORD, B. S. in E. E., Electrical Engineering.**

**WILLIAM J. POLLOCK, B. S. in E. E., Electrical Engineering.**

**WINFIELD D. BEARCE, B. S. in E. E., Electrical Engineering.**

**JOHN O. KAMMERMAN, B. S. in E. E., Electrical Engineering.**

HAROLD C. BARTHOLOMEW, M. E. in E. E., *Electrical Engineering.*

HORACE P. FRY, B. S. in E. E., *Mechanical Drawing.*

JOSEPH H. STANNARD, JR., *Mechanical Drawing.*

HARRISON D. BATES, JR., *Mechanical Drawing.*

ROBERT E. SMITH, M. E., *Mechanical Drawing.*

GEORGE H. SMITH, M. E., *Mechanical Drawing.*

WILLIAM J. MICHENER, *Mechanical Drawing.*

---

JOHN J. MORRIS, *Superintendent of Shops.*

WILLIAM MELLOR, *Wood-working.*

NEAFIE E. SUTPHEN, *Wood-working.*

CHARLES W. BLOEMKER, *Forging.*

JOHN F. MURPHY, *Iron Founding.*

PERCIVAL R. HALL, *Iron-working.*

ROBERT H. KREWSON, *Iron-working.*

GEORGE W. H. FAWKES, *Wood-working*

SAMUEL APPLIN, *Iron-working.*

WILLIAM A. BOURN, *Wood-working.*

EDWARD M. LAWLEY, *Iron-working.*

The Course in Chemical Engineering covers a period of four years, and leads to the degree of Bachelor of Science in Chemical Engineering. The tuition fee is two hundred dollars (\$200.00) a year. Graduates who continue in the practice of their profession may receive the technical degree of Chemical Engineer under the provisions stated on page 107.

The chemical studies introduced into this course will not only give the student a thorough acquaintance with the fundamental principles of chemical science, but will also afford him a complete drill in analysis, and in the preparation of inorganic and organic products. Instruction in technical analysis and applied chemistry is reserved until the last year. Frequent excursions are made to adjacent plants for the purpose of studying practical processes in operation, and examining in detail the mechanical appliances in use.

The requirements for admission to this course are: English A and B; History A, B, C, D (any two of these four); Mathematics A, C, D, E; Physics A; and German A, or French A. For details see pp. 82-100.

## FRESHMAN CLASS.

Subjects.	Number of hours a week.		For a brief description, see	
	1st Term	2d Term	page	number
General Chemistry . . . . .	18	—	188	91A
Qualitative Analysis . . . . .	—	18	188	92A
Drawing . . . . .	3	3	234	492
Steam Engine . . . . .	—	2	235	495
Shop Work . . . . .	3	3	235	501
English Composition . . . . .	1	1	199	231
English Language . . . . .	2	—	199	232
English Literature . . . . .	—	2	200	234
French . . . . . { one only }	3	3	206	282
German . . . . . { required }	3	3	212	322
Trigonometry . . . . .	4	—	229	483
Algebra . . . . .	—	4	229	481
Physics . . . . .	2	2	244	618

## SOPHOMORE CLASS.

Subjects.	Number of hours a week.		For a brief description, see	
	1st Term	2d Term	page	number
Analytical Chemistry (Qualitative) . . . . .	10	10	188	92A
Mechanical Drawing and Sketching . . . . .	3	3	235	493
Kinematics . . . . .	3	—	235	496
Shop Work . . . . .	3	3	235	503
English Composition . . . . .	1	—	200	235
English Literature . . . . .	—	2	200	233
French . . . . . { one only }	3	3	206	288
German . . . . . { required }	3	3	212	327
Analytic Geometry } . . . . .	5	5	229	{ 484
Calculus . . . . .	—	2	230	{ 485
Physics . . . . .	3	4	244	619-02
Analytic Mechanics . . . . .	—	2	244	626

## JUNIOR CLASS.

Subjects.	Number of hours a week.		For a brief description, see	
	1st Term	2d Term	page	number
Analytical Chemistry (Quantitative) . . . . .	10	10	188	93
Assaying . . . . .	4	4	189	102
Organic Chemistry . . . . .	2	2	188	94A
Statics . . . . .	2	3	235	497
Hydrostatics . . . . .	—	3	235	498
Electrodynamics . . . . .	2	2	237	521
Mechanical Laboratory . . . . .	3	3	236	511
Electrical Laboratory . . . . .	3	3	237	529
Graphic Statics . . . . .	5	—	236	508
Thermodynamics . . . . .	—	3	236	509
Metallurgy . . . . .	—	2	210	311
Analytic Mechanics . . . . .	2	—	244	626

## SENIOR CLASS.

Organic Chemistry . . . . .	2	2	188	94B
Practical Organic Chemistry . . . . .	10	10	188	96
Applied Chemistry . . . . .	2	2	188	97
Electro-Chemistry . . . . .	1	1	189	100
Physical Chemistry . . . . .	4	4	189	106
Steam Engine . . . . .	2	—	235	504
Steam Boilers . . . . .	2	—	236	506
Thermodynamics . . . . .	2	—	236	510
Designing . . . . .	3	3	236	517
Electrodynamics . . . . .	3	—	237	524
Electricity and Magnetism . . . . .	—	3	237	528
Electrical Laboratory . . . . .	3	3	238	531
Business Law . . . . .	1	1	263	205
Specifications . . . . .	—	1	237	519

### III.—THE WHARTON SCHOOL OF FINANCE AND COMMERCE.

The Wharton School of Finance and Commerce was founded by JOSEPH WHARTON, Sc.D., of Philadelphia, in 1881, to provide instruction and special training in Finance and Commerce. The founder expressed the desire that the School should offer facilities for obtaining: (1) "An adequate education in the principles underlying successful civil government"; (2) "a training suitable for those who intend to engage in business or to undertake the management of property." The course has been constructed in accordance with these ideals.

Recent years have witnessed the growth of a great mass of systematized knowledge concerning business facts, methods and principles. At the same time the increasing tendency toward specialization tends to keep a young man in a narrow groove and to prevent him from obtaining a broad, general knowledge of business. It is therefore essential to secure thorough training in the fundamentals of business science before entering into active practice.

In addition to the training for Industry, Commerce and Finance, the courses in the Wharton School prepare young men for the Study of the Law, for entrance into the Public Service, and for Teaching.

The work of the first two years is mainly prescribed; that of the last two is elective, and is directed along the lines selected by each student for his chosen career. In all courses, emphasis is laid upon original research work. The degree of Bachelor of Science in Economics (B. S. in Econ.) is conferred upon satisfactory completion of 60 units of work. A Special Two-Years' Course in Business Practice and Banking, leading to a certificate of proficiency, is also given in the Wharton School for qualified persons twenty-one years of age or over.

All subjects taken by students in the Wharton School of Finance and Commerce are grouped under three heads, as follows:

## I. FRESHMAN REQUIRED WORK.

No.	Subjects.	Hours a week.	Page where description is found.
161	Political Economy . . . . .	2	258
171	Earth and Man, or . . . . .	2	258
172	Political Geography . . . . .	2	259
201	Accounting . . . . .	3	263
631	Constitutional Law . . . . .	2	267
231	} English . . . . .	3	199
232			
234	} Chemistry . . . . . or Business Law . . . . .	2	188
91			
205		2	263

## 2. SOPHOMORE REQUIRED WORK.

233*	Nineteenth Century Novelists . . . . .	2	200
257*	Modern Essayists . . . . .	2	201
235	Composition . . . . .	1	200
In addition to these, six units in Foreign Language and two units in History must be taken before gradu- ation.			

## 3. ELECTIVES.†

162	Advanced Economics . . . . .	S	2	258
163	English Civilization . . . . .	J	2	258
164	Economic Progress in the Nineteenth Century . . . . .	S	2	258
165	The Tariff and International Trade . . . . .	J	1	258
166	Rise of Modern Industry . . . . .	J	1	258
167	Economic Problems . . . . .	S	2	259
172	Political Geography . . . . .	F	2	259
173	Climate and Civilization . . . . .	S	2	259
175	Economic Conditions of South America . . . . .	S	2	259
181	Economic and Commercial Geography . . . . .	S	2	259
182	American Commerce . . . . .	S	2	259
183	Stock and Produce Exchanges . . . . .	J	2	260
184	Transportation . . . . .	S	2	260
185	Railway Rates and Traffic . . . . .	J	2	260
186	Organization of International Trade . . . . .	S	2	260
187	Ocean Transportation . . . . .	J	2	261

\* One term subjects.

† Subjects marked "F" may be elected by Freshmen or other students. Subjects marked "S" may be taken by Sophomores, Juniors or Seniors. Subjects marked "J" may only be taken by Juniors and Seniors. No subject may be taken by a student who has not had the necessary preparation.

## 3. ELECTIVES—Continued.

No.	Subjects.		Hours a week.	Page where description is found.
188	Brokerage	J	2	261
189	History of American Commerce	S	1	261
190	Standards of Living	JF	2	261
191	Social Economy	J	2	262
192	Social Reformers	S	2	262
193	Charities	S	2	262
194	Sociology	S	2	262
195	American Social Problems	S	2	262
196	Criminology	S	2	262
197*	Social and Vital Statistics	J	2	262
198	Sociological Field Work	JSS	2	263
202	American Industry	SS	2	263
203	Industrial Management	SS	2	263
204	Field Work in Industry	JF	2	263
205	Business Law	F	2	263
205A	Advanced Business Law	SS	2	263
206	Advanced Accounting	SS	3	264
207	Practical Accounting Systems	JSS	2	264
210	Life Insurance	SS	2	264
211	Fire, Marine and Fidelity Insurance	SS	2	265
212	The Law and Practice of Insurance	JSS	2	265
213	Insurance	J	2	265
214	Investments	J	3	265
216	Banking	J	3	265
217	Money, Credit and Foreign Exchange	F	2	265
218	Public Finance	F	2	266
219	Corporation Finance	S	3	266
221	Marketing of Products	J	2	266
225	Real Estate	J	3	266
226†	Private Finance	SS	2	267
632	Citizenship, Federal and State	SS	2	267
634	City Government and City Problems	S	2	267
635	Labor Legislation	S	2	267
636A	Election Methods and Systems	S	1	268
636B	Political Parties	S	1	268
637	Colonies and Dependencies of the United States	S	2	268
638	International Law	SS	2	268
639	Foreign Policy of the United States	SS	2	269
641*	The Police Power	SS	2	269
642	Blackstone's Commentaries	S	2	269
651	Government Regulation of Industry and Commerce	S	2	269
653*	Comparative Federal Governments	S	2	269

\* Omitted in 1908-09.

† Must be preceded by course 217, Money and Credit.

## 3. ELECTIVES—Continued.

No.	Subjects.		Hours a. week.	Page where description is found.
654	Preliminary Bar Examination.....	F	2	269
655	Secretarial Work .....	F	3†	270
656	Constitutional Government and Constitutional Guarantees in the Republics of Latin-America .....	S	2	270
657*	European Colonial Systems.....	J	2	270
658	Railway Law.....	J	2	270
659	Readings in Political Science .....	J	2	270

\* Omitted in 1908-09.

† Course 655 counts 1½ units of credit.

Sixty units of work are required for the degree of Bachelor of Science in Economics. Of these sixty, eight units of elective work may be taken from the courses offered primarily to the students in Arts and Science. Gymnasium work is not counted as part of the sixty units for the degree, but is required of all students.

## TWO-YEAR SPECIAL COURSE IN BUSINESS PRACTICE AND BANKING.

The Two-Year Course in Business Practice and Banking is designed to meet the needs of those who are prevented, by lack of time, from taking the regular course for a degree. All the subjects in the two-year course are required. The satisfactory completion of the course entitles the student to a certificate of proficiency.

## FIRST YEAR.

No.	Subjects.	Hours per Week.
201	Accounting .....	3
	or	
206	Advanced Accounting .....	3
202	American Industry .....	2
203	Industrial Management .....	2
161	Political Economy .....	2
205	Business Law .....	2
217	Money and Credit .....	2
631	Constitutional Law .....	2
213	Insurance .....	2
231	} English .....	
232		3
234		

## SECOND YEAR.

No.	Subjects.	Hours per Week.
219	Corporation Finance.....	3
207	Practical Accounting Systems.....	2
208	C. P. A. Course .....	2
216	Banking .....	2
225	Real Estate .....	2
205A	Advanced Business Law.....	2
221	Marketing of Products.....	2
204	Field Work in Industry .....	2
233	} English .....	
235		3
257		

## SUBJECTS OF INSTRUCTION

OFFERED BY

## THE COLLEGE FACULTY.

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ANTHROPOLOGY.	HYGIENE.
ARCHITECTURE.	ITALIAN.
ASTRONOMY	LATIN.
BOTANY.	LINGUISTICS.
CHEMISTRY.	LOGIC ( <i>see</i> PHILOSOPHY).
CIVIL ENGINEERING.	MATHEMATICS.
ECONOMICS ( <i>see also</i> FINANCE AND COMMERCE).	MECHANICAL ENGINEERING. METALLURGY ( <i>see</i> GEOLOGY).
ELECTRICAL ENGINEERING ( <i>see</i> MECH. ENG.).	MINERALOGY ( <i>see</i> GEOLOGY). MUSIC.
ENGLISH.	PEDAGOGY ( <i>see</i> PHILOSOPHY).
ETHICS ( <i>see</i> PHILOSOPHY).	PHILOSOPHY AND PEDAGOGY.
FINANCE AND COMMERCE.	PHYSICS.
FINE ARTS.	POLITICAL SCIENCE ( <i>see also</i> FINANCE AND COMMERCE).
FRENCH.	PSYCHOLOGY.
GEOLOGY, METALLURGY AND MINERALOGY.	SANSKRIT.
GERMAN.	SOCIOLOGY ( <i>see also</i> FINANCE AND COMMERCE).
GREEK.	SPANISH.
HEBREW.	ZOOLOGY.
HISTORY.	

# ROSTER OF THE COURSES IN AR

	<b>MONDAY.</b>					
	9-10	10-11	11-12	12-1	2-3	3-4
Anthropology . . . . .		709 I 710 II	709 I		701	702 I 708 II
Astronomy . . . . .	62 II				64	63
Botany . . . . .		77	77	77	87	87
Chemistry . . . . .					92 92 Bi	92 92 Bi
Economics . . . . .			172 (i)	161 (iv)	162	172 (ii)
English . . . . .	231 (i-iv) 235 (i) 239 (i) 239 (v)	232 (i-iii) W I 233 (ii) I 234 (ii) 234 (i) W 238 II 257 (ii) II 258 II	230 (ii) 248 (i)	230 (iii) 248 (ii)		
Fine Arts . . . . .					282 (i-ii) 282 (i-ii) Bi	
French . . . . .	281 (i) 283 283 W 283 Bi	283 (i-ii) W 290 A		284	281 (ii)	
{ Geology . . . . . Metallurgy . . . . . Mineralogy . . . . .	293	301 305	311 (i) II	297 II	295 I 296 II 298	295 I 296 II 298
German . . . . .		322 (i-ii) W 323 A (i) I 323 A (i) I W 323 B (i) II 323 B (i) II W	322 (i-ii)	322 Bi	321 325 C	
Greek . . . . .		331	332	330 I	342	
History . . . . .		366		375 A	378	
Latin . . . . .	440 I 442 II	433 (i)	431 C I 432 B II 433 (ii) I	431 A I 431 B I 432 A II 432 C II	434 A I 444 B II	430 D 436 438 II
Mathematics . . . . .	461 Bi II 462 Bi I 463	465			466 I 467 II 468 II	
Philosophy . . . . . (Psychology.) (Pedagogy.)		565 566 II 567 I	581 I 585 (i) 586 II	585 (i)	584	584
Physics . . . . .	601 (i) 601 Bi			601 (ii-iv) 606 I 607 II		
Political Science . . . . . Sociology . . . . .	192	196	681 (i)	631 (ii) 631 (vi) 193 195		681 (viii) 631 (vii)
Spanish . . . . . Italian . . . . .			671			
Zoölogy . . . . .	683	683	683		683	683 685
Other subjects . . . . .						

Small Roman numbers in parentheses (i), (ii), etc., denote the hours for different sections of the class in the same subject.

Subjects marked W are exclusively for students in the Course in Finance and Commerce.

Subjects marked Bi are exclusively for students in the Courses in Biology.



## ANTHROPOLOGY.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
701	<i>General Anthropology.</i> M. W. 2.15..... Gordon and Speck.	2	2	2	
702	<i>Prehistoric Archaeology</i> First term. M. W. 3..... Gordon.	2	—	1	
703	<i>Ethnology of the Pacific.</i> Second term; hours to be arranged..... Speck.	—	2	1	
704	<i>Primitive Arts and Indus- tries.</i> Second term. M. W. 4..... Speck.	—	2	1	
705	<i>Primitive Religions.</i> First term. M. W. 4..... Speck.	1	—	1	
706	<i>American Linguistics.</i> Hours to be arranged..... Sapir.	2	2	2	
707	<i>American Archaeology and Ethnology.</i> Second term. Tu. and Th. 2.15..... Speck and Sapir.	—	2	1	
708	<i>European Ethnology.</i> Second term. M. W. 3..... Gordon.	—	2	1	
709	<i>Human Anatomy.</i> First term. M. W. 10-12	4	—	2	
710	<i>Somatology.</i> Second term. M. W. 10..... Gordon.	—	2	1	
711	<i>Museum and Laboratory work, study of collec- tions and Museum methods.</i> Tu. Th. S. 9-12.....	9	9	4	
712	<i>Anthropological Seminar.</i> Hours to be arranged.....	—	—	1	

## DESCRIPTION.

701. *General Anthropology.*—The principles of somatology; man's position in the animal kingdom; races and varieties of

man. Prehistoric Archaeology; the evidences of man's antiquity; the time and place of his origin; his distribution in geological time and his movements down to the historical period; physical characteristics and types of culture in the prehistoric period. Ethnology: social life of primitive man; origin and development of the utilitarian and esthetic arts; theories of language. Illustrated by collections in the University museum and by lantern slides.

702. *Prehistoric Archaeology*.—The earliest human records and their interpretation; geological phenomena; fossil remains; the stone age and subdivisions; the age of bronze.

703. *Ethnology of the Pacific*.—A study of the several ethnic groups forming the population of the Pacific Islands.

704. *Primitive Arts and Industries*.—Lectures on the genesis of artistic activities and industrial processes. Illustrated by specimens in the Museum and by lantern slides.

705. *Primitive Religions*.—Early aspects of religious thought. Forms of worship and their origin. The evolution of the idea of God.

706. *American Linguistics*.—An introduction to the study of aboriginal American languages and literature.

707. *American Archaeology and Ethnology*.—The remains of prehistoric man in America and their relation to the historic peoples of this continent, the characteristics of aboriginal American culture, and its bearing on the question of origin. The linguistic stocks and their affiliations; mode of life, domestic arts, social organizations and religious beliefs of the Indian tribes. Illustrated by collections in the University and by lantern slides.

708. *European Ethnology*.—The races of Europe; the paleolithic and neolithic cultures; the physical characters, racial relationships and early migrations of the several elements forming the European population. The social and industrial development of prehistoric Europe. The ethnic affinities of the modern population.

709. *Human Anatomy*.—This course is equivalent to course I in the Medical School and is intended as an introduction to Somatology.

710. *Somatology*.—The physical criteria of race. Course 709 or its equivalent must be taken as a preparation for this subject.

711. *Museum* and laboratory work, study of collections and museum methods. For graduate students only.

712. *Anthropological Seminar*.—Informal discussion of the various aspects of research in anthropology. Primarily for graduate students.

## ARCHITECTURE.

No.	Subjects.	Hours per week.	Units of Work.	Preparation required, and remarks.
1	<i>Architectural Drawing</i> . . . . . Whitney, Gumaer, Laird, Jones, Hulin.  <i>Freehand Drawing:</i> 2a Grade I . . . . . 2b Grade II . . . . . 2c (See following 6oE) Dawson and Assistants.	12  4 4 2	1  1 1	
3	<i>Elements of Architecture</i> . . . . . Laird, Gumaer.	2	2	1.
4	<i>Design</i> . Grade I . . . . . Gumaer, Laird.	8	2	1.
6	<i>Descriptive Geometry</i> . . . . . Whitney.	6	2	1.
7	<i>Shades and Shadows</i> . . . . . Whitney.	6	1	6.
9	<i>Perspective</i> . . . . . Whitney.	6	1	6.
11	<i>Design</i> . Grade II . . . . . Gumaer, Laird.	15	4	2a, 3 and 4.
13	<i>Design</i> . Grade III . . . . . Gumaer, Holmes, Laird.  <i>Freehand Drawing:</i> Grade III . . . . . Grade IV . . . . . Dawson and Assistants.	15  4 4	3  1 1	7 and 11. (See foot-note 2, p. 137.)  2b. 15
17	<i>Architectural History; Ancient and Medieval</i> . . . . . Osborne.	6	2	1 and 2a.

No.	Subjects.	Hours per week.	Units of Work.	Preparation required, remarks, etc.
•19	<i>Architectural History; Renaissance and Modern</i> Osborne.	6	2	17.
	<i>Design:</i>			
21	Grade IV .....	22	5	9 and 13. (See foot-
22	Grade V .....	27	6	21. [note 2, p. 137.]
	Cret and Groben.			
23	<i>Freehand Drawing; Historic Ornament.</i> Everett.	4	1	15.
24	<i>Freehand Drawing; Antique.</i> Dawson and Assistants.	4	1	16.
	<i>Water-Color Drawing:</i>			
25a	Grade I .....	3	1	15.
25b	Grade II .....	3	2	25a.
	Dawson and Assistants.			
26	<i>Pen-and-Ink Rendering</i> .. Grade I. Hays.	2	1	15.
30	<i>Mechanics of Architecture.</i> Nolan and Assistants.	3	1½	Math. 480, 482 and 487.
31	<i>Graphic Statics in Architecture.</i> Nolan and Assistants.	3	1½	
32a	<i>Carpentry</i> .. Nolan and Assistants.	1	1	
32b	<i>Masonry and Iron Work</i> .. Nolan and Assistants.	1	1	
	<i>Building Sanitation</i> .. (392, 33, 34).	1	1	See Hygiene 392.
392	<i>Hygiene</i> .. Berkeley.	—		Ten lectures.
33	<i>Heating and Ventilation</i> .. Nolan.	—	1	Ten lectures, follow- ing 392.
34	<i>Plumbing and Drainage</i> .. Nolan.	—		Ten lectures, follow- ing 33.

## COURSES IN THE COLLEGE.

177

No.	Subjects.	Hours per week.	Units of Work.	Preparation required, remarks, etc.
36	<i>Design:</i> Grade VI..... Cret.	30	10	22.
38	<i>Design (Thesis):</i> Grade VII..... Cret.	30	4	36.
	<i>Freehand Drawing (Life):</i>			
40a	Grade VII.....	4	1	24.
40b	Grade VIII..... Everett.	4	1	40a.
41a	<i>Water-Color Rendering</i> ..... Grade I..... Dawson.	3	1	25b.
41b	Grade II..... Cret	3	1	41a.
42	<i>Pen-and-Ink Rendering</i> ..... Grade II..... Hays.	2	1	26.
44	<i>History of Painting</i> ..... Everett.	1	1	19.
47	<i>Professional Ethics and Practice</i> ..... Laird.	1	1	
48	<i>Special Lectures</i> .....	1	1	See p. 181.
51	<i>Design</i> ..... Cret.	30	15	38.
53	<i>Freehand Drawing (Life)</i> ..... Everett.	4	2	40b.
55	<i>Water-Color Rendering</i> .... Dawson and Assistants.	5	2	41b.
57	<i>History of Architecture: Research and Conference</i> ..... Osborne.	2	2	17, 19, and a satisfactory reading knowledge of French or German.
59	<i>Fine Arts: History or Theory. Research and Conference</i> ..... Everett.	1	1	44.

No.	Subjects.	Hours per week.	Units of Work.	Preparation required, remarks, etc.
60A	<i>Architectural Construction: Design.</i> Nolan.	26	6	22
60B	<i>Architectural Construction: Design: Thesis.</i> Nolan.	26	6	60 A.
60C	<i>Architectural Construction: Theory.</i> Nolan.	6	4	32a, 32b, 30, 31.
60D	<i>Foundations of Buildings.</i> Nolan.	3	1	32a, 32b, 30, 31.
60E	<i>Specifications, Estimates and Contracts.</i> Nolan.	3	1	32a, 32b, 33, 34.
2C	<i>Freehand Drawing . . . . .</i> Dawson and Assistants.	2	1	For Freshmen in Chemistry.

## DESCRIPTION.

1. *Architectural Drawing*.—Exercises in instrumental drawing pencil and brush work and lettering, with particular application to architectural subjects.
- 2a and b. *Freehand Drawing*.—Grades I and II. Outline representations of simple objects, in groups, as exercises in developing the powers of observation as well as in the training of the hand. Elementary drawing in charcoal from grouped objects and from casts of fruit, flowers, etc., as exercises in representations of the third dimension.
- 2c. *Drawing in Pencil from the Object*.—Required of Freshmen in Chemistry.
3. *The Elements of Architecture*.—Lectures on the Five Orders, their affiliated forms and derivatives and other elements of Renaissance design and upon the elementary principles of architectural design, accompanied by exercises in drawing and rendering the elements.
4. *Design*.—Grade I. Problems in elementary design involving the use of the elements.

6. *Descriptive Geometry*.—Orthographic projections; revolutions; single and double curved surfaces of revolution; intersections of lines, planes and solids; tangents and developments. Lectures and exercises. (The subjects of shades and shadows and perspective are separately treated, as follows):
7. *Shades and Shadows*.—Lectures upon principles, accompanied by exercises, with especial reference to architectural practice.
9. *Perspective*.—Lectures upon principles, accompanied by exercises, with especial reference to architectural practice.
11. *Design*.—Grade II. Exercises in architectural composition and in rendering, involving the application of the principles of architectural drawing. Sketch problems in the elementary design of the small ensemble.
13. *Design*.—Grade III. Problems in the elementary design of the small ensemble and in the design of architectural motifs; two to four weeks each. Exercises in memory and imagination.
- 15 and 16. *Freehand Drawing*.—Grades III and IV. Drawing in charcoal from casts of architectural ornament, architectural fragments, and parts of the figure.
17. *History of Architecture*.—First term, from the prehistoric age to the reign of the Emperor Diocletian. Second term, from the fall of the Roman Empire to the Fifteenth Century. Lectures, two hours; research, four hours.
19. *History of Renaissance and Modern Architecture*.—From Brunelleschi to the close of the Nineteenth Century. Lectures, two hours; research, four hours.
- 21 and 22. *Design*.—Grades IV and V. Problems in (a) the design of component motifs of architectural composition, (b) the design of the ensemble; three to four weeks each. One-day sketch problems in the plan of the larger ensemble. Exercises in the analysis of architectural form.
23. *Freehand Drawing*.—Grade VI. From motifs in historic ornament, involving composition.
24. *Freehand Drawing*.—Grade V. Charcoal drawing from reproductions of antique figures.
- 25a and 25b. *Water-Color Drawing*.—Grades I and II. Exercises in the handling of the medium and in translation of color.

26. *Pen-and-Ink Rendering*.—Grade I. Theory of the composition of line drawings and rendering of architectural drawings in pen and ink.

30. *Mechanics of Architectural Construction*.—Nature, properties and strength of the materials used in architectural construction; special application of the principles of mechanics to buildings and structural parts of buildings, such as beams, girders, columns, trusses, arches, etc.

31. *Graphic Statics in Architecture*.—Special applications of graphic methods to the analysis of stresses in different kinds of architectural construction, such as the beams, trusses, piers, arches, abutments, etc., of buildings.

32a. *Carpentry*.—Nature and properties of woods used in buildings. Carpentry, heavy framing and mill construction. Lectures and drawings. (32a and 32b form a two-year course, 32a being given in 1909-10.)

32b. *Masonry and Iron Work*.—Masonry and ordinary foundations: iron work and steel work. Lectures and drawing. (32a and 32b form a two-year course, 32a being given in 1909-10.)

33 and 34. *Building Sanitation*.—33, Heating and Ventilation; 34, Plumbing and Drainage. Preceded by Hygiene, 392. Scientific principles of Sanitary Engineering and their application in building practice.

36. *Design*.—Grade VI. Problems in the composition of the ensemble, four to five weeks each; in plan composition, one week each; and in the composition of interiors, one week each. One-day sketch problems in decorative architecture.

38. *Design*.—Grade VII. (Thesis.) An extended problem in the composition of the ensemble with descriptive memoir, upon a subject chosen by the student with the approval of the Professor of Architecture.

*Design Judgments*.—During the year of 1907-08 the following architects and other artists served in judgments upon the work in Design by the upper classes of the School; namely, Messrs.:

D. K. Boyd,	Wm. E. Groben,	Albert Kelsey,
George H. Bickley,	Alfred H. Gurneaer,	M. B. Medary, Jr.,
Arthur H. Brockie,	Mitchell Hastings,	John Molitor,
C. W. Churchman,	C. E. Howell,	J. H. Rankin,
Paul P. Cret,	James P. Jamieson,	Edgar V. Seeler,
H. L. Duhring, Jr.,	T. M. Kellogg,	Arthur Truscott,
	C. C. Zantzinger.	

40a and 40b. *Freehand Drawing from the Life*. Grades VII and VIII.

41a and 41b. *Water-Color Rendering*.—Grades III and IV. Studies in rendering: first, of architectural objects; second, of photographic subjects.

42. *Pen-and-Ink Rendering*.—Grade II. Advanced studies in the rendering of architectural drawings in pen and ink.

44. *History of Painting*.—A course of lectures upon the history of painting.

47. *Professional Ethics and Practice*.—I, Aspects and problems of practice; professional ethics, competitions, preliminary cost computations, utilities in the planning of schools, libraries, courthouses, etc., etc. Lectures and research. II, Current practice as reflected in technical periodicals; summaries, reports and discussions.

48. *Special Lectures on Architectural and Allied Subjects* (as given in 1907-08).

*Design and History*.—Sixteen lectures, viz:

The Planning of Houses and the Superintendence of Buildings, one lecture, C. Francis Osborne, University of Pennsylvania.

Introduction to the Study of Decorative Art, one lecture, Alfred H. Gumaer, B. S., University of Pennsylvania.

Architectural Sculpture, two lectures, Professor Leslie W. Miller, School of Industrial Arts.

The Proportions of the Human Figure, two lectures, R. Tait McKenzie, B. S., M. D., University of Pennsylvania.

Japanese Architecture, two lectures, Professor Warren P. Laird, University of Pennsylvania.

Decorative Heraldry and Tapestry, four lectures, Charles E. Dana, C. E., Sometime Professor of Art, University of Pennsylvania; President Antiquarian and Numismatic Society.

The Art of Babylonia and Assyria, one lecture, Dr. Morris Jastrow, Jr., University of Pennsylvania.

Sculptures of the Parthenon, one lecture, Herbert E. Everett, University of Pennsylvania.

Roman Life under the Empire, two lectures, Walton B. McDaniel, A. M., Ph. D., University of Pennsylvania.

*Construction and Practice*.—Ten lectures, viz:

Reinforced Concrete, four lectures, Emile G. Perrot, Architect, Philadelphia.

Electrical Installation, four lectures, Clayton W. Pike,  
S. B., Electrical Engineer, Philadelphia.

The Weathering of Building Stones, two lectures, Amos  
P. Brown, Ph. D., University of Pennsylvania.

51. *Design*.—Problems in the composition of the large ensemble,  
permitting special lines of study.

53. *Freehand Drawing from the Life*.

55. *Water-Color Rendering*.—Advanced studies in the rendering  
of architectural perspectives.

57. *Historical Research*.—Research, conference and memoir in  
special fields of architectural history.

59. *The Fine Arts*.—Special lines of study in the theory or history  
of the Fine Arts. Research and conference.

The following subjects, together with those numbered 141 and  
142, constitute the Option in Advanced Architectural Construction.

60A. *Architectural Construction: Design*.—Practical problems of  
four to five weeks each in architectural constructive  
design. Buildings designed and analyzed as structural  
units and the details in each problem carefully worked out.

60B. *Architectural Construction: Design: Thesis*.—An extended  
problem in architectural constructive design, consisting  
of a subject chosen by the student with the approval of  
the Professor of Architecture, descriptive memoir and  
specification accompanying the design.

60C. *Architectural Construction: Theory*.—Typical skeleton structures.  
Plans of column, girder, and beam framing.  
Details of framed metal connections. Plate-girders and  
box-girders. Wind-bracing. Truss design and details.  
Latest fire-proofing methods. Reinforced concrete con-  
struction.

60D. *Foundations of Buildings*.—Consideration of special prob-  
lems relating to foundations for heavy buildings. Pile  
foundations. Grillage. Masonry Wells and Caissons.  
Cantilever foundations. Foundations under water.

60E. *Specifications, Estimates and Contracts*.—General and special  
clauses of architects' specifications for the different kinds  
of material and labor. Forms of contracts and their  
relations to building operations. Examination and  
comparison of typical and model forms. Practice in  
writing specifications. Methods of estimating cost of  
labor and materials for the different kinds of archi-  
tectural construction.

## ASTRONOMY.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
61	<i>Astronomy</i> . . . . . C. L. Doolittle.	3	—	1½	Mathematics 461 and 462.
62	<i>Practical Astronomy and Geodesy</i> . C. L. Doolittle.	—	4	2	61, and Mathematics 465 and 467.
63	<i>Practical Astronomy</i> . E. Doolittle.	3	3	3	62.
64	<i>Theoretical Astron- omy</i> . E. Doolittle.	3	3	3	61, and Mathematics 465 and 467. A reading knowl- edge of French and German is desirable.

## DESCRIPTION.

61. *Astronomy*.—Young's *Manual of Astronomy*.

62. *Practical Astronomy and Geodesy*.—Doolittle's *Practical Astronomy*. Lectures. Use of sextant, transit and zenith telescope in determination of time, latitude and azimuth. Method of Least Squares, with applications.

63. *Practical Astronomy*.—Continuation of 62.

64. *Theoretical Astronomy*.—Orbit determination based upon Watson's *Theoretical Astronomy* and Oppolzer's *Lehrbuch sur Bahnbestimmung*, Vol. I.

## BOTANY.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
71	<i>Structure and Func- tions of Plants</i> . Macfarlane. Harvey, E. N.	6	6	4	
72	<i>Systematic Study of Plants</i> . Harshberger.	6	6	4	71.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
73	<i>Plant Irritability...</i> Macfarlane.	3	3	2	71. Omitted in 1908-09.
74	<i>Comparative Taxonomy of Angiosperms.</i> Macfarlane.	3	3	2	71 and 72. Omitted in 1908-09.
75	<i>Plant Nutrition....</i> Krautter.	3	3	2	71. Omitted in 1908-09.
76	<i>Morphology of the Pteridophyta and Gymnosperma.</i> Krautter.	6	6	4	71 and 72. Omitted in 1908-09.
77	<i>Morphology of the Fungi.</i> Harshberger.	3	3	2	71 and 72.
78	<i>Morphology of the Algae and Bryophytes.</i> Harshberger.	3	3	2	71 and 72. Omitted in 1908-09.
79	<i>Morphology of the Angiospermia.</i> Macfarlane.	6	6	4	71.
80	<i>Forest Botany .....</i> Krautter.	3	3	2	71 and 72 or shorter equivalents.
81	<i>Distribution .....</i> Harshberger.	3	3	2	71. Omitted in 1908-09.
82	<i>Plant Life and Plant Economics.</i> Macfarlane.	2	2	2	
87	<i>Plant Cell Contents.</i> Krautter.	3	3	2	71.
88	<i>Food Plants and Products.</i> Harshberger.	3	3	2	71.

## DESCRIPTION.

71. *Structure and Functions of Plants*.—Two hours lecture and four hours laboratory work.

Study of two leading types of higher plants, cell structure and history, tissue formation, structure and functions of root, stem and leaf organs of the Spermatophyta. A large part of the work in plant physiology is performed in the greenhouses or in the Physiological Laboratory.

72. *Systematic Study of Plants*.—Two hours lecture and four hours laboratory work.

Special types are studied, beginning with the simplest and advancing to the most complex. In the lectures the leading lines of morphological evolution from type to type are traced. During the second term a comparative study is made of twenty-five orders of flowering plants, and species belonging to these are identified by the aid of manuals.

73. *Plant Irritability*.—One hour lecture, two hours laboratory work.

Advanced studies on the phenomena of irritability and irrito-contractility in plants, their comparative sensitivity and responses to environmental stimuli.

74. *Comparative Taxonomy of Angiosperms*.—One hour lecture, two hours laboratory work.

The principal native and exotic families are studied from living and alcoholic material, their structural affinities and differences are compared, and morphological adaptations in special genera are emphasized.

75. *Plant Nutrition*.—One hour lecture, two hours laboratory work.

Advanced studies on the sources and absorption of plant foods, their elaboration, metabolism, and assimilation or ultimate decomposition.

76. *Comparative Morphology of the Pteridophyta and Gymnosperma*.—Two hours lecture, four hours laboratory and seminar work.

77. *Comparative Morphology and Taxonomy of the Myxomycetes and Fungi*.—One hour lecture, two hours laboratory and seminar work.

Study of the structure and development of the fungi, including culture methods, with study of the diagnostic characters of the families.

78. *Comparative Morphology and Taxonomy of the Algae, Hepaticae and Musci*.—One hour lecture, two hours laboratory work.

Advanced study of the fresh water and marine Algae, of the leading groups and genera of the hepatics and mosses and their systematic affinities.

79. *Comparative Morphology of the Angiospermia*.—Two hours lecture, four hours laboratory and seminar work.

80. *Forest Botany*.—One hour lecture, two hours laboratory work.

This course comprises the scientific study of forest trees with reference to their botanical characters, their association in the forest, the qualities of their timber; as well as forest technology and the plants forming the underbrush.

81. *Comparative Plant Distribution*.—One hour lecture, two hours laboratory work.

The typical plants of definite geographical areas will be studied, as well as plant formations, plant associations, and the philosophy of plant distribution.

82. *Plant Life and Plant Economics*.—Two hours lecture and demonstrations on important economic plants and their families. Two courses. Saturday, 10.15-12.15.

87. *Plant Cell Contents*.—A study of all the non-protoplasmic contents found in plant cells; their occurrence, structure, composition and recognition.

88. *Comparative Study of Food Plants and their Products*.—This course consists of a study of the principal food plants with reference to the botanical structure of the various parts used as food and the identification of these plant parts in the finished product.

#### CHEMISTRY.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
91	<i>General Inorganic Chemistry.</i> E. F. Smith, McCutcheon, Frazer, Plummer.	4	4	2	This subject must precede all other work in Chemistry.
91A	<i>General Inorganic Chemistry.</i>	18	—	6	Prescribed for Freshmen in Chemistry and in Chemical Engineering.
92	<i>Analytical Chemistry.</i> E. F. Smith, Shinn, Lukens.	5	5	3	91. Recitation, 1 hr Laboratory, 4 hrs.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
92A	<i>Analytical Chemistry.</i>	10-18	10-18	5½-10	91A. Prescribed for Sophomores in Chemistry and in Chemical Engineering.
93	<i>Analytical Chemistry.</i> E. F. Smith, Wallace.	5	5	3	92. Recitation, 1 hr. Laboratory, 4 hrs.
94A	<i>Organic Chemistry.</i> Taggart.	2	2	2	93.
94B	<i>Organic Chemistry.</i> Taggart.	2	2	2	94A. Given in conjunction with 96.
95	<i>Organic Chemistry.</i> (Minor Course.) Taggart.	5	5	3	91. Recitation, 1 hr. Laboratory, 4 hrs.
96	<i>Practical Organic Chemistry.</i> Taggart.	10	10	3	93. Must be accompanied by 94A or 95.
97	<i>Applied Chemistry.</i> Shinn.	2	2	2	93, 95.
98	<i>Analysis of Foods,</i> <i>etc.</i> Taggart.	9	—	3	93.
99	<i>Theoretical Chemistry.</i> E. F. Smith.	1	1	1	91, 92, 93, 94A.
100	<i>Electro-Chemistry</i> .. E. F. Smith, Goldbaum.	1	1	1	93.
101	<i>Seminary.</i> ..... E. F. Smith.	—	1	1	—
102	<i>Assaying</i> ..... Shinn.	4	4	2	Must be accompanied or preceded by 93.
103	<i>Gas Analysis</i> .... (Minor Course.) Shinn.	—	4	1	91.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
104	<i>Organic Chemistry.</i> E. F. Smith.	1	1	1	91.
105	<i>Practical Electro-Chemistry.</i> E. F. Smith.	--	10	1	100.
106	<i>Physical Chemistry</i> Hildebrand.	4	.4	2 $\frac{1}{2}$	93.

## DESCRIPTION.

91. *General Inorganic Chemistry.*—Recitation, conversational lectures and laboratory work. Experiments illustrating the principles of Chemistry.

91A. Same as 91. Given in greater detail. Intended for students pursuing Chemistry as a major subject.

92. *Analytical Chemistry.*—Qualitative analysis. Laboratory practice with recitations. Preparation of a series of inorganic salts.

92A. This course is to 92 what 91A is to 91.

93. *Analytical Chemistry.*—Quantitative analysis. Gravimetric and volumetric analysis, with drill in mineral analysis. Inorganic preparations continued.

94A. *Organic Chemistry (Elementary Course).*—Illustrated lecture course, preliminary to 94B. It is intended to give the student a general knowledge of the carbon compounds. Special attention is paid to practical application.

94B. *Organic Chemistry (Advanced).*—Can only be taken by those who have completed 94A.

95. *Organic Chemistry (Minor Course).*—Lectures and laboratory work.

96. *Practical Organic Chemistry.*—Preparation of a series of typical organic compounds, together with ultimate analysis.

97. *Applied Chemistry.*—Lectures upon subjects pertaining both to Inorganic and Organic Chemistry, supplemented by laboratory examples and regular excursions to chemical plants.

98. *Analysis of Foods and Technical Products*.—Analysis of milk, butter, bread, honey, coffee, chocolate, sugar (with the use of the polariscope), pepper, water, soaps, cast-iron, steel, lubricating oils, paints, tanning materials, etc., etc. Lectures and recitations, with practical exercises.

99. *Theoretical Chemistry*.—Lectures and recitations.

100. *Electro-Chemistry*.—Lectures, setting forth the theoretical side of the subject, with applications of the electric current to analysis, and to the preparation of chemical products.

101. *Seminary*.—The hour devoted to this feature of the instruction is given to the reading of current chemical literature, to the discussion of papers on special topics in Chemistry, or to lectures delivered by advanced students.

102. *Assaying*.—Gold, silver, lead, iron, copper and coal assays. Lecture and laboratory.

103. *Gas Analysis* (Minor Course).—Determination of the constituents of furnace and illuminating gas. Practice in the use of the Hempel and the Orsat gas apparatus.

104. *Organic Chemistry*.—Lectures.

105. *Practical Electro-Chemistry*.—Laboratory.

106. *Physical Chemistry*.—Lectures, one hour a week, dealing with relations between theories and facts, as well as with the properties, and phase and energy relations of matter. Laboratory, three hours a week, measurement of densities of gases and liquids, boiling points, freezing points, practice with spectrometer, polarimeter, refractometer and various physico-chemical apparatus.

## CIVIL ENGINEERING.

No.	Subjects.	Hours a week.		Preparation required, remarks, etc.
		1st Term.	2d Term.	
111	<i>Lettering</i> . . . . . Slagle, Bruner, Phelps, Adler, Armstrong.	2	—	.
112	<i>Mechanical Drawing</i> . . . Slagle, Bruner, Graves, Phelps, Adler, Rosen- garten.	4	4	

No.	Subjects.	Hours a week.		Preparation required, remarks, etc.
		1st Term.	2d Term.	
113	<i>Mechanical Drawing</i> . . . Slagle, Graves, Teeter, Armstrong.	2	—	112.
114	<i>Pen Topography</i> . . . Slagle, Troelsch, Armstrong.	—	2	
115	<i>Color Topography</i> . . . Slagle, Graves, Armstrong.	—	2	114.
116	<i>Map Drawing</i> . . . Slagle, Bruner, Teeter.	2	—	112, 114, 126.
117	<i>Freehand Drawing</i> . . . Slagle, Gregory, Wolff, Armstrong.	—	2	
120	<i>Descriptive Geometry</i> . . . Slagle, Bruner, Graves, Gregory, Troelsch, Rosengarten.	3	3	120.
121	<i>Stereotomy</i> . . . Slagle, Bruner, Graves, Phelps, Teeter.	2	—	120.
125	<i>Surveying: Theory</i> . . . Ingram, Grandienard, Graves, Wolff, Adler, Armstrong.	3	—	
126	<i>Surveying: Practice</i> . . . Ingram, Grandienard, Bruner, Graves, Wolff, Armstrong.	3	3 half and 2 w'ks.	Concurrent with 125.
127	<i>Railroad Surveying: Theory</i> . Ingram, Grandienard, Bruner, Graves, Wolff, Armstrong.	—	3	126.
128	<i>Railroad Surveying: Practice</i> . Ingram, Grandienard, Bruner, Graves, Wolff, Armstrong.	—	3 half and 2 w'ks.	Concurrent with 127.

No.	Subjects.	Hours a week.		Preparation required, remarks, etc.
		1st Term.	2d Term.	
129	<i>Railroad Construction and Maintenance.</i> Ingram, Grandlienard, Wolff, Armstrong.	2	—	127, 128.
130	<i>Railroad Office Work . . .</i> Ingram, Grandlienard, Wolff.	2	—	Concurrent with 129.
131	<i>Railroad Economics . . .</i> Ingram, Grandlienard, Wolff.	2	—	129.
132	<i>Railroad Design . . . . .</i> Ingram, Grandlienard, Wolff.	2	—	129, 130.
133	<i>Geodesy: Theory . . . . .</i> Ingram, Grandlienard, Wolff.	—	1	126.
134	<i>Geodesy: Practice . . . . .</i> Ingram, Grandlienard, Wolff.	—	3	126.
135	<i>Hydromechanics . . . . .</i> Easby, Phelps, Teeter, Adler, Rosengarten.	—	3	485.
136	<i>Water Supply . . . . .</i> Easby, Phelps, Adler.	—	2	485. Concurrent with 135.
137	<i>Sanitary Engineering . . .</i> Easby, Bruner, Phelps.	2	—	135.
138	<i>Hydraulic Works Design.</i> Easby, Phelps, Adler.	5	—	135, 136. Concurrent with 137.
139	<i>Hydraulic Testing.</i> Easby, Phelps, Adler.	3	3	Concurrent with or following 135.
140	<i>Mechanics of Materials.</i> Marburg, Gregory, Troelsch, Rosengarten.	5	—	485.

No.	Subjects.	Hours a week.		Preparation required, remarks, etc.
		1st Term.	2d Term.	
141	<i>Materials of Construction.</i> Marburg, Berry.	—	3	140.
142	<i>Cement Testing</i> . . . . . Berry, Gregory, Troelsch, Armstrong, Rosengarten.	3	—	
143	<i>Materials Testing</i> . . . . . Berry, Troelsch, Teeter, Rosengarten.	—	3	Concurrent with or following 140.
145	<i>Graphic Statics</i> . . . . . Marburg, Gregory, Troelsch.	—	1.	Concurrent with 146.
146	<i>Framed Structures</i> . . . . . Marburg, Gregory, Troelsch, Teeter, Rosengarten.	—	5	140.
147	<i>Framed Structures</i> . . . . . Marburg, Gregory, Troelsch.	2	—	146.
148	<i>Bridge Design</i> . . . . . Marburg, Gregory, Rosengarten.	—	2	146.
149	<i>Bridge Design</i> . . . . . Marburg, Gregory, Troelsch.	4	4	148.
150	<i>Masonry</i> . . . . . Slagle, Bruner, Graves.	—	3	140.
151	<i>Masonry Design</i> . . . . . Slagle, Bruner.	—	2	150.
155	<i>Roads and Pavements</i> . . . . Easby, Adler.	1	—	
156	<i>Inspection Tours</i> . . . . . Marburg, Easby, Ingram, Berry.	At hours assigned.		

No.	Subjects.	Hours a week		Preparation required, remarks, etc.
		1st Term.	2d Term.	
158	<i>Summer Memoir</i> .....		Vacation work.	
159	<i>Thesis</i> .....	—	6	Marburg, Easby, Ingram, Berry, Slagle.

## DESCRIPTION.

111. *Lettering*.—Freehand lettering.

112. *Mechanical Drawing*.—Drafting instruments and operations; elementary projection; line shading; coloring; graining; representation of earthwork and masonry.

113. *Mechanical Drawing*.—Drawings based on sketches and measurements of objects.

114. *Pen Topography*.—Conventional methods of representation. Elementary exercises.

115. *Color Topography*.—Conventional methods of representation. Elementary exercises.

116. *Map Drawing*.—Map of hydrographic and topographic survey made during the previous summer.

117. *Freehand Drawing*.—Lines and figures on plane surfaces; objects in freehand perspective.

120. *Descriptive Geometry*.—Elementary plane problems. Isometric and oblique projections. Problems of the point, line and plane; single-curved, double-curved and warped surfaces. Shades and shadows. Perspective.

121. *Stereotomy*.—Stone cutting. Determination of the forms and sizes of stones in masonry constructions.

125. *Surveying: Theory*.—Theory relating to the use and adjustments of the instruments; theory of topographic, hydrographic, mining and city surveying.

126. *Surveying: Practice*.—Practice in the adjustment and use of field and office instruments.

Three hours a week are devoted to field practice for one term and a half, including a special farm survey which is made during the first term; and, at the end of the second term, two entire weeks are devoted to an extended topographic and hydrographic survey.

127. *Railroad Surveying: Theory*.—Simple, compound, reversed and transition curves. Turn-outs and switches. Theory of the computation of earthwork.

128. *Railroad Surveying: Practice*.—Practice in staking out curves, cross-sectioning, setting of slope stakes, etc.

In addition to three hours a week during half of a term, two entire weeks, at the end of that term, are devoted to field practice in laying out a short line of railroad; including reconnaissance, preliminary survey, location, determination of grades, cross-sectioning, drawing of the map and profile.

129. *Railroad Construction and Maintenance*.—Maintenance of railway track and structures. Rolling stock, signaling, etc.

130. *Railroad Office Work*.—Computation and distribution of earthwork. Paper location of a line of railroad; construction of the profile; estimates of quantities and cost.

131. *Railroad Economics*.—General theory of the inception and completion of railroad projects; probable volume of traffic and its probable growth; effect of details of alignment on operating expenses and revenue.

132. *Railroad Design*.—Elements of the design of yards, terminals and sidings: slip-switches, crossings and track details.

133. *Geodesy: Theory*.—Study of the instruments and field methods used in geodetic surveying.

134. *Geodesy: Practice*.—Practice in the use of instruments of precision for the measurement of base-lines, angles, and differences of level.

135. *Hydromechanics*.—Pressure and energy of fluids. Flow by orifices, tubes and weirs. Flow in pipes, conduits, canals and natural streams. Current meters. Hydraulic motors. Measurement of water-power.

136. *Water-Supplies*.—Consumption by municipalities. Yields from various sources. Examination of water-supplies. Impounding reservoirs. Purification. Distribution.

137. *Sanitary Engineering*.—Sewers and drains. Construction and ventilation. Disposal of sewage.

138. *Hydraulic Works Design*.—The designing of water and sewerage works.

139. *Hydraulic Testing*.—Tests for determining the discharge of water through orifices and pipes and over weirs; and of the efficiency of different types of hydraulic motors.

140. *Mechanics of Materials*.—The resistance and elasticity of materials. Theory of flexure applied to beams and columns. Torsion. Effect of impact. Resilience, fatigue, etc.

141. *Materials of Construction*.—Physical characteristics of the materials of construction, and the conditions by which these are influenced, with special reference to reinforced concrete.

142. *Materials Testing*.—Tests for determining the physical properties of cement, sand, mortar and plain and reinforced concrete.

143. *Materials Testing*.—Tests for determining the physical properties of steel, wrought and cast iron, timber, brick, etc.

145. *Graphic Statics*.—Graphic methods applied to the determination of stresses, bending moments, shears, etc.

146. *Framed Structures*.—Determination of stresses by analytic methods. Relative merits of different types of bridge and roof trusses. Skeleton construction of buildings, viaducts, turn-tables, stand-pipes, etc. Details of construction.

147. *Framed Structures*.—Stresses in cantilever, arch, swing and suspension bridges.

148. *Bridge Design*.—Complete design of a plate-girder bridge. Computations and detail drawings.

149. *Bridge Design*.—Complete design of a railroad bridge, Pratt truss. Computations and detail drawings.

150. *Masonry*.—Foundations, dams, retaining walls, piers, abutments, culverts, arches and concrete constructions.

151. *Masonry Design*.—General design of a variety of masonry structures, including estimates of quantities and cost.

155. *Roads and Pavements*.—Construction, maintenance and cost. Consideration of the relative merits of the various types.

156. *Inspection Tours*.—Visits to engineering works and manufacturing establishments.

158. *Summer Memoir*.—A memoir of not less than sixteen hundred words, prepared during the summer vacation following the Junior year, descriptive of some engineering work or manufacturing plant, based on direct personal inquiries and observations.

159. *Thesis*.—Thesis on a professional subject.

## ECONOMICS.\*

No.	Subjects	Hours a week:		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
161	<i>Political Economy.</i> Nearing, Watson, Seiler.	2	2	2	
162	<i>Advanced Economics.</i> Patten.	2	2	2	161.
163	<i>English Civilization</i> Patten.	2	2	2	162.
171	<i>Earth and Man</i> . . . Tower.	2	2	2	
172	<i>Political Geography.</i> G. G. Huebner.	2	2	2	
181	<i>Commercial and Economic Geog- raphy.</i> J. R. Smith.	2	2	2	171.
186	<i>Organisation of International Commerce.</i> J. R. Smith.	2	2	2	171.

\* Courses 161, 162, 163, 171, 172, 181 and 186 are the only courses in Economics open to Arts and Science students as elective or group subjects. Courses 201 and 217, if taken by Arts men, must be taken in conjunction with 161 and 171. For courses in Economics open *only* to Wharton School students, and for a description of all courses in Economics, see WHARTON SCHOOL OF FINANCE AND COMMERCE.

## ENGLISH.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
231*	<i>Composition</i> . . . . . O'Bolger, Stork, Shelly, Collins, F. A. Child, Cleve- land, Crane, Men- denhall, Wanger.	1	1	1	A and B (admission). See footnote.
232*	<i>English Language</i> . . . Easton, C. G. Child, Quinn, O'Bolger, Stork, Shelly.	—	2	1	A and B (admission) See footnote.
233*	<i>Nineteenth Century Novelists</i> . Schelling, Quinn, Weygandt.	2	—	1	A and B (admission). See footnote.
234*	<i>History of English Literature</i> . C. G. Child, Wey- gandt, Collins.	2	—	1	A and B (admission). See footnote.
235*	<i>Composition</i> . . . . . C. G. Child, Quinn, Weygandt, O'Bol- ger, Stork, Shelly, Collins.	1	1	1	231. See footnote.
236	<i>Public Speaking</i> . . . F. A. Child.	1	1	1	May be taken simul- taneously with 231- 235.
237	<i>Newspaper Writing</i> . Weygandt.	1	1	1	May be taken simul- taneously with 231- 235.
238	<i>Anglo-Saxon</i> . . . . . Easton.	2	2	2	231, 232, 234.
239	<i>Composition</i> . . . . . C. G. Child, Quinn, Weygandt.	1	1	1	232, 234, 235.

\* Note.—231, 232, 233, 234, 235, must be taken in fulfilment of the required work.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
240	<i>Age of Elisabeth . . .</i> Schelling.	—	2	1	231, 232, 234. Alter-nate years.
241	<i>Seventeenth and Eighteenth Cen-tury Literature.</i> Schelling.	2	—	1	231, 232, 234. Alter-nate years.
242	<i>Literature of the United States.</i> Quinn.	2	—	1	231, 232, 234. Omit-ted in 1908-09.
243	<i>Poetics . . . . .</i> Quinn.	2	—	1	231, 232, 234. Alter-nate years.
244	<i>Anglo-Saxon and Middle English Literature.</i> C. G. Child.	—	2	1	231, 232, 234. Alter-nate years.
245	<i>Chaucer . . . . .</i> C. G. Child.	—	2	1	231, 232, 234. Omit-ted in 1908-09.
246	<i>Nineteenth Century Drama.</i> Weygandt.	—	2	1	231, 232, 234. Omit-ted in 1908-09.
247	<i>English Philology . . .</i> Easton.	2	2	2	238.
248	<i>Composition . . . . .</i> Quinn, Weygandt.	1	1	1	239.
249	<i>Debating . . . . .</i> F. A. Child.	2	2	2	236 or its equivalent.
250	<i>English Bible . . . .</i> Penniman.	2	1	—	231, 232, 234. Omit-ted in 1908-09.
251	<i>Elizabethan Dram- atists</i> Schelling.	2	—	1	231, 232, 234. Omit-ted in 1908-09.
252	<i>Elizabethan Gram-mar</i> Easton.	2	—	1	231, 232, 234.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
253	<i>Seventeenth Century Drama.</i> Schelling.	—	2	1	231, 232, 234. Omitted in 1908-09.
254	<i>Nineteenth Century Poets.</i> Schelling.	2	—	1	231, 232, 234. Alternate years.
255	<i>Contemporary Poets.</i> Weygandt.	—	2	1	231, 232, 234. Alternate years.
256	<i>Poets and Critics of the Eighteenth Century.</i> Penniman.	2	—	—	231, 232, 234. Omitted in 1908-09.
257	<i>English Essayists.</i> Schelling, Weygandt, Shelly.	—	2	1	231, 232, 234.
258	<i>English Popular Ballad.</i> Stork.	—	2	1	231, 232, 234.

## DESCRIPTION.

Courses 231, 232, 233, 234 and 235 are prescribed for all students as constituting five of the six required units in English.

Three objects are contemplated in the arrangement of the undergraduate work in English: (1) proficiency in writing, with some practice in speaking and debate; (2) a general acquaintance with English Literature; (3) a study of the nature and history of the language.

- 231. *Composition.*—Weekly themes on assigned subjects, popular and literary, written in class and corrected and commented on by the instructor in charge.
- 232. *English Language.*—An historical treatment of the English Language. Recitations, followed by lectures on the English vocabulary, the nature of language, the history of the alphabet and allied subjects.

233. *Nineteenth Century Novelists*.—Development of the Novel through the century. Lectures, recitations, writing of papers based on readings in the works of the authors discussed.

234. *History of English Literature*.—From Anglo-Saxon times to the present day. Lectures, collateral reading, preparation of papers.

235. *Composition*.—Weekly themes descriptive, narrative, expository, argumentative; read and discussed in class; corrected by the instructor and returned with individual criticism.

236. *Public Speaking*.—Practice in the preparation and delivery of speeches and debates.

237. *Newspaper Writing*.—Weekly or bi-weekly themes. Reporting, correspondence, special articles, editorials, dramatic criticism, book-reviewing.

238. *Anglo-Saxon*.—Sweet's *Anglo-Saxon Primer* Cook's *First Book in Old English*. This subject involves a comparative study of Anglo-Saxon, Middle English and Modern English, and the elements of Phonetics.

239. *Composition*.—Themes on popular and literary subjects assigned, with special reference to the gathering and ordering of material.

240. *The Age of Elizabeth*.—English Literature from the Revival of Learning to Milton. Lectures with collateral reading and reports.

241. *Seventeenth and Eighteenth Century Literature*.—English Literature from Waller to Cowper. Lectures with collateral reading and reports.

242. *Literature of the United States*.—Its history and relation to national life and thought, with brief introduction on English Literature in the colonies. Lectures and assigned reading.

243. *Poetics*.—Nature of English poetry and structure of English verse, with an historical treatment of English metres. Lectures, with study of poetical forms and practice in scanning.

244. *Anglo-Saxon and Middle English Literature*.—History of the language from the earliest period to Chaucer, and its relation to historical and social development.

245. *Literary Study of Chaucer*.—Reading and critical study of selected works. Lectures on Chaucer's life, his relation to his time, and the sources of his works.

246. *Nineteenth Century Drama*.—The development of the stage from Sheridan to Pinero; plays of the Romantic Revival; Robertson and his school; the influences of Dumas, Ibsen and Maeterlinck.

247. *English Philology*.—Middle English texts (generally Chaucer, and Skeat's *Piers Plowman*).

248. *Composition*.—Themes, creative and expository; individual criticism by the instructor.

249. *Debating*.—Practice in the preparation and delivery of debates.

250. *The English Bible*.—Form and structure of the various books; study of the kinds of poetry in the Psalms.

251. *Elizabethan Dramatists*.—Lectures on the origins and growth of the English Drama from its beginning to the close of the reign of Queen Elizabeth. Preparation of papers involving the principles of dramatic construction, comparison, and origins.

252. *Elizabethan Grammar*.—Study of an Elizabethan text (generally a play of Shakespeare). Abbot's *Shakespearean Grammar*.

253. *Seventeenth Century Drama*.—Lectures on the history of English Drama from the death of Queen Elizabeth to the closing of the theatres in 1642. Preparation of papers as in 251.

254. *Nineteenth Century Poets*.—The Romantic Revival; Poetry of Revolt; Wordsworth, Keats, Tennyson, Browning, Whitman and Swinburne. Lectures; recitations; collateral reading and discussion.

255. *Contemporary Poetry*.—Meredith, Dobson, Robert Bridges, Henley, Kipling, Davidson, William Watson, Yeats, Phillips, and others. Lectures.

256. *Poets and Critics of the Eighteenth Century*.—Discussions of literary theories and movements.

257. *English Essayists*.—The nature and growth of the modern literary and critical essay. Collateral reading and discussions.

258. *The English Popular Ballad*.—A study of the popular ballad and its influence and place in literature. Lectures, reading in class and papers on special topics.

## FINE ARTS.

No.	Subjects.	Hours a week.		Units. of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
271	<i>History of Italian Painting.</i> Everett.	2	2	2	Open only to Seniors and Juniors in the College and Wharton School.
273	<i>History of Architecture.</i> Osborne.	2	2	2	Open only to Seniors and Juniors in the College and Wharton School.
274	<i>History of Italian Sculpture.</i> Everett.	2	2	2	Open only to Seniors and Juniors in the College and Wharton School.
275	<i>Advanced Studies in the History of Architecture.</i> Osborne.	2	2	2	Open to students who have passed 273 with a mark of G, or better.
276	<i>Advanced Research in the History of Painting.</i> Everett.	2	2	2	Open to students who have passed 271 with a mark of G, or better.
277	<i>Research in the History of Sculpture.</i> Everett.	2	2	2	Open to students who have passed 274 with a mark of G, or better.
278	<i>Philosophy of Architecture.</i> Cret.	1	1	1	273. The lectures will be given in the French language.
279	<i>History and Aesthetics of Music.</i> Clark.	2	2	2	

## DESCRIPTION.

271. *History of Italian Painting*.—Classical, Early Christian Mediæval and Renaissance Painting in Italy—Considered from the artistic as well as historic point of view, with the object of forming a sound taste through the study and analysis of the great masterpieces. Lectures and comparative study of photographs. This course is open only to Seniors and Juniors in the College and Wharton School.

273. *History of Architecture*. Lectures on the historical styles in the order of their development. The subject is treated from both a sociological and technical point of view and includes the analysis of the principles of composition as applied to architectural design. This course does not require any previous knowledge of drawing or construction and is primarily intended to stimulate a correct appreciation of architecture in non-technical students. This course is open only to Seniors and Juniors in the College and Wharton School.

274. *History of Italian Sculpture*.—The relation of Classic Sculpture to the Early Christian Style; Mediæval Sculpture; the Influence of French Gothic; Renaissance Sculpture. Lectures and the comparative study of photographs. This course is open only to Seniors and Juniors in the College and Wharton Schools.

275. *Advanced Studies in Architectural History*. Research and reports by individual members of the class. For admission to this course, students must have passed 273 with a mark of "G" or better.

276. *Research in the History of Painting*.—Bi-monthly themes on special topics, involving reading, and the study of monuments and photographs. For admission to this course students must have passed 271 with a mark of G or better.

277. *Research in the History of Sculpture*.—Bi-monthly themes on special topics, involving reading, and the study of monuments and photographs. For admission to this course students must have passed 274 with a mark of G or better.

278. *Philosophy of Architecture; Foundation of the Styles.*—Study of the development of an architectural element under the influence of new conditions of life; new ideals and the restraint of tradition. Influence of social conditions upon architectural development. The theorists of architecture.

NOTE.—Courses 271, 273, 274, 276, 277, 278 are open to Juniors and Seniors only.

279. *History and Ästhetics of Music.*—The acoustic basis of music. Rhythm. Melody. The growth of tonality. Combination of sounds, first, contrapuntally; second, harmonically. Development of musical expressions. "Schools" of music. "Forms" of composition. Modern conception of the orchestra as a means for the expression of definite concepts, as well as of emotion.

For description of English courses 243, etc., see pages 199 to 201.

#### FRENCH.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
*281	<i>Elementary French.</i> La Rochelle, Mackenzie.	4	4	2	May not be taken as a required or group subject.
282A	<i>Modern French Prose Reading.</i> Crawford, La Rochelle, Mackenzie	2	2	2	A and B. (Admission.)
282B	<i>Modern French Prose Composition.</i> Crawford, La Rochelle, Mackenzie.	1	1	1	A and B. (Admission.)
283A	<i>Modern French Prose Reading.</i> Vurpillot.	2	2	2	282A.
283B	<i>Modern French Prose Composition.</i> Vurpillot.	1	1	1	282B.

\* See note near top of p. 119.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
284A	<i>Classical Drama</i> . . . Vurpillot.	2	2	2	283.
284B	<i>Outline of French Literature.</i> Vurpillot.	1	1	1	283.
285	<i>Old French</i> . . . . Rennert.	3	3	3	284.
286A	<i>Modern Novel</i> . . . . Crawford.	2	2	2	Free elective, not to count as French. Alternate years; omitted 1909-10.
286B	<i>French Drama Nine-tenth Century.</i> Crawford.	2	2	2	283. Alternate years, beginning 1909-10.
286C	<i>French Lyric Poetry.</i> Vurpillot.	2	2	2	283.
287	<i>Scientific French</i> . . . Vurpillot.	2	2	2	282.
288A	<i>Scientific French Prose Reading.</i> Mackenzie.	2	2	2	282A.
288B	<i>Scientific French Prose Composition.</i> Mackenzie.	1	1	1	282B.
289	<i>Advanced Scientific French.</i> Vurpillot.	2	2	2	283 or 287 or 288.
290A	<i>French Literature and Ideas Eighteenth Century.</i> Vurpillot.	2	2	2	283.
290B	<i>French Conversation.</i> La Rochelle.	2	2	2	283.

## DESCRIPTION.

281. *Elementary French*.—Pronunciation, Grammar and Reading. Chardenal, *Complete French Course*; Super, *French Reader*; Labiche and Martin, *Le voyage de M. Perrichon*.

282A. *Modern French*.—Daudet, *Tartarin de Tarascon*; Mérimée, *Contes*; Maupassant, *Contes*; A. de Musset, *Comédies*; Augier, *Le gendre de M. Poirier*; Rostand, *Les Romanesques*.

282B. *Modern French*.—Grammar and Composition; written and oral exercises.

283A. *Modern French*.—Taine, *Origines de la France contemporaine*; Ste. Beuve, *Les causeries du lundi*; Victor Hugo, *Notre Dame de Paris*. Sight reading of French plays.

283B. *Modern French*.—Grammar; Prose Composition. Conversation.

284A. *Classical Drama*.—Corneille, *Le Cid*; Racine, *les Plaideurs*; Molière, *Tartuffe*; language of the seventeenth century.

284B. *Outline of French Literature*.—Petit de Julleville, *Leçons de Littérature Française*. (*De Corneille à nos Jours*.)

285. *Old French*.—Toynbee, *Specimens of Old French*; Historical Grammar; Toynbee-Brachet, *French Grammar*. History of French Literature: Petit de Julleville, *Leçons de Littérature Française*. (*Des Origines à Corneille*.)

286A. *Modern Novel*.—History of the French, Spanish and Italian Novel in the nineteenth century. Lectures, collateral reading and preparation of papers. English translations may be used.

286B. *French Drama of the XIXth Century*. Lectures and reading.

286C. *French Lyric Poetry*.—Lyric Poetry from Ronsard to the present day. French versification. Lectures, reading.

287. *Scientific French*.—Bowen, *Scientific French Reader*; Luquien, *Popular Science*.

288A. *Scientific French*.—Herdler, *Scientific French Reader*; Bowen, *Scientific French Reader*.

288B. *Scientific French*.—Grammar; Prose Composition. Conversation.

289. *Advanced Scientific French*.—*La Revue Scientifique*.

290A. *History of French Literature and Ideas in the XVIIIth Century*.—Lectures and Reading. Essays part of which in French.

290B. *French Conversation and Composition*.—Talks and Essays in French on linguistic and literary topics.

## GEOLOGY, MINERALOGY, METALLURGY.

## GEOLOGY.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
291	<i>Lithology</i> ..... A. P. Brown.	2	—	1	It is desirable that 301 or 305 precede or accompany 291.
292	<i>Petrography</i> ..... Travis.	2	2	1	291.
293	<i>General Geology</i> ... A. P. Brown.	2	2	2	It is desirable that 301 or 305 precede or accompany 293.
294	<i>Field Work</i> ..... A. P. Brown.	—	3	1	It is desirable that 291 or 293 precede or accompany 294.
295	<i>Dynamic Geology</i> .. Ehrenfeld.	4	—	1½	
296	<i>Physiographic Geol- ogy.</i> Ehrenfeld.	—	4	1½	295.
297	<i>Economic Geology</i> .. Ehrenfeld.	—	2	1	Chemistry 91. It is desirable that 301 or 305 precede or accompany 297.
298	<i>Invertebrate Paleo- ontology.</i> A. P. Brown.	3	3	2	
299	<i>Inorganic Geology</i> .. Ehrenfeld.	2	—	1	Chemistry 91. For Civil Engineering students only.

## MINERALOGY.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
301	<i>Mineralogy</i> ..... A. P. Brown.	2	2	2	It is desirable that Chemistry 91 precede or accompany 301.
302	<i>Mineralogy</i> ..... A. P. Brown.	2	2	2	301.
303	<i>Determinative Mineralogy</i> . A. P. Brown, Travis.	2	2	1	301 or 305, and Chemistry 91. It is desirable that this subject be preceded or accompanied by Chemistry 92.
304	<i>Physical Mineralogy</i> . A. P. Brown, Travis.	2	—	1	301 or 305, and Physics 601.
305	<i>Mineralogy</i> ..... Travis.	2	2	2	Chemistry 91.
306	<i>Mineralogy</i> ..... Ehrenfeld, Travis.	2	2	2	Chemistry 91. Open to Civil Engineering students only.

## METALLURGY.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
311	<i>Theory of Metallurgical Processes</i> . A. P. Brown, Ehrenfeld, Travis.	—	2	1	Chemistry 91.

## DESCRIPTION.

## GEOLOGY.

Students electing a group containing Geology may take work in Mineralogy and Metallurgy, counting it toward the group work in Geology.

291. *Lithology*.—Lectures on the classification of rocks, and their determination in hand specimens.

292. *Petrography*.—Laboratory work. Practice in the preparation of thin sections of rocks, and their examination with the microscope. Preparation of photomicrographs of rocks.

293. *General Geology*.—Stratigraphy of the rock systems in connection with paleontology. Laws of dynamic geology. Structural geology of North America with reference to that of Europe. The principal economic minerals and fossils and distribution of metals, ores and fuels.

294. *Field Work*.—Examination of rock structures in the field, and practice in geological surveying.

295. *Dynamic Geology*.—An account of the nature and methods of work of the forces, inorganic and organic, which, operating at the surface or underground, lead to the formation, alteration or disturbance of rocks. Two hours lecture, two hours laboratory work.

296. *Physiographic Geology*.—A study of the history of the birth, growth and decay of forms of land and the existing surface features of the earth as the result of geologic forces. Two hours lecture, two hours laboratory work.

297. *Economic Geology*.—Lectures on the naturally occurring geologic products of economic importance.

298. *Invertebrate Paleontology*.—A study of characteristic types representing the more important orders of fossil Invertebrates.

299. *Inorganic Geology*.—Dynamic, structural and physiographic geology, with descriptions of the occurrence of ores and other economic minerals.

## MINERALOGY.

301. *Mineralogy*.—Crystallography, native elements, sulphides, chlorides, fluorides, oxides.

302. *Mineralogy*.—Carbonates, silicates, sulphates, phosphates etc.

303. *Determinative Mineralogy*.—Laboratory work. Determination of minerals by pyrognostic and chemical properties.

304. *Physical Mineralogy*.—Determination of minerals by physical properties, use of contact and reflecting goniometer, polariscope, polarizing microscope, refractometer, etc.

305. *Mineralogy*.—Embraces salient points of 301 and 302, but only such minerals as are of economic importance are considered.

306. *Mineralogy*.—Short course in Descriptive and Determinative Mineralogy.

## METALLURGY.

311. *Theory of Metallurgical Processes*.—The dressing and metallurgical treatment of ores.

## GERMAN.

No.	Subjects.	Hours a week		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
321	<i>Elementary German</i> . Barba.	4	4	2	May not be taken as required, or as group work.
322A	<i>Prose Reading</i> . . . . . Wesselhoeft, Davis, Fogel, Fey, Schumacher, Bickel, Barba.	2	2	2	A (admission), or an approximate equivalent.
322B	<i>Composition</i> . . . . . Wesselhoeft, Davis, Fogel, Fey, Schumacher, Bickel, Barba.	1	1	1	A (admission), or an approximate equivalent.
323A	<i>Schiller's Dramas</i> . Learned, Wesselhoeft, Davis.	2	—	1	322 A and B.
323B	<i>Historical Prose</i> . . . D. B. Shumway, Wesselhoeft, Davis.	—	2	1	322 A and B.
323C	<i>Composition and Conversation</i> . Shumway, Wesselhoeft, Fey, Schumacher.	1	1	1	322 B.
324A	<i>Modern German Novel</i> . Learned.	2	—	1	323 A and B.
324B	<i>Lessing's Dramas</i> . . . D. B. Shumway.	—	2	1	323 A and B. Alternates with 324 D. Omitted 1908-09.

## COURSES IN THE COLLEGE.

211

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
324C	<i>Composition and Conversation.</i> Wesselhoeft.	1	1	1	323 C.
324D	<i>Lessing's Prose Works.</i> D. B. Shumway.	—	2	1	323 A and B. Alternates with 324 B.
325A	<i>Modern German Lyrics.</i> Learned.	—	2	1	323 A and B.
325B	<i>Goethe's Dramas . . .</i> D. B. Shumway.	2	—	1	323 A and B. Alternates with 325 D.
325C	<i>German Essays . . .</i> Wesselhoeft.	1	1	1	324 C.
325D	<i>Goethe's Prose Works.</i> D. B. Shumway.	2	—	1	323 A and B. Alternates with 325 B. Omitted 1908-09.
326A	<i>Goethe's Faust . . .</i> D. B. Shumway.	2	—	1	324 A and B or 325 A and B.
326B	<i>History of the Modern German Drama.</i> Learned.	—	2	1	323 A and B.
326C	<i>Selected Plays . . .</i> Shumway.	—	2	1	323 A and B.
326D	<i>History of German Literature.</i> Learned.	1	1	1	323 A and B.
327A	<i>Scientific Reading . . .</i> Davis, Fogel, Fey, Schumacher, Bickel.	2	2	2	322 A and B.
327B	<i>Prose Reading . . .</i> Davis, Fogel, Fey, Schumacher, Bickel.	1	1	1	
328	<i>Scientific Reading . . .</i> Wesselhoeft.	2	2	2	322 A and B
329	<i>Advanced Scientific Reading.</i> D. B. Shumway.	2	2	2	328.

## DESCRIPTION.

- 321. Elementary German. Grammar and reading.
- 322A. Reading of literary prose and eighteenth century drama.
- 322B. Grammar and composition. Written and oral exercises.
- 323A. Lectures on Schiller's life and works, and the literary movements of his time. Reading of selected texts.
- 323B. Reading of selected historical prose.
- 323C. German composition and conversation.
- 324A. Lectures on the rise and development of the German novel of the nineteenth century, and its relation to the contemporaneous novel of other countries. Reading of selected texts.
- 324B. Lectures and reading and discussion of Lessing's more important dramas.
- 324C. Writing of essays in German. German conversation.
- 324D. Lectures, reading and discussion of Lessing's prose works.
- 325A. Lectures on the modern German lyric and reading of selected texts. Goethe's lyrics.
- 325B. Goethe's dramas. Lectures and reading of texts.
- 325C. Original German essays and discussions in German.
- 325D. Lectures, reading and discussion of Goethe's prose works.
- 326A. Goethe's *Faust*. Lectures on the genesis of the drama, and interpretation of the text.
- 326B. History of the Modern German drama. Lectures on the development of the German drama of the nineteenth century, and reading and discussion of selected plays.
- 326C. Selected plays of Kleist, Grillparzer, Sudermann, Hauptmann, or other modern dramatists.
- 326D. History of German Literature. Lectures; two hours throughout the year. Open to graduate students and teachers and to students of the Junior and Senior classes.
- 327A. Scientific Reading.
- 327B. Prose Reading.
- 328. Scientific Reading.
- 329. Advanced Scientific Reading.

## GREEK.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
33 <sup>1</sup>	Bates.	3	3	3	B, C, D, E (admission). Must be taken in fulfilment of required work.
33 <sup>2</sup>	Bates.	3	3	3	33 <sup>1</sup> .
33 <sup>3</sup>	Bates.	2	2	2	33 <sup>1</sup> . May be taken with 33 <sup>2</sup> .
33 <sup>4</sup>	Bates.	2	2	2	33 <sup>2</sup> or 33 <sup>3</sup> . Alternate years. Omitted in 1908-09.
33 <sup>5</sup>	Lamberton.	2	2	2	33 <sup>2</sup> or 33 <sup>3</sup> . May be taken by term or by year. Alternate years.
33 <sup>6</sup>	Lamberton.	2	2	2	33 <sup>2</sup> or 33 <sup>3</sup> . May be taken by term or by year. Alternate years. Omitted in 1908-09.
33 <sup>7</sup>	Lamberton.	2	2	2	33 <sup>2</sup> or 33 <sup>3</sup> . May be taken by term or by year. Alternate years. Omitted in 1908-09.
33 <sup>8</sup>	Greek Literature . . . Lamberton.	2	—	1	Alternate years. Omitted in 1908-09.
33 <sup>9</sup>	Greek Life . . . . . Lamberton.	2	—	1	Alternate years.
34 <sup>0</sup>	Lamberton.	—	2	1	33 <sup>2</sup> or 33 <sup>3</sup> . Offered primarily for the George Allen Prize. When so taken it does not count towards a degree.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
341	<i>Archaeology.....</i> Bates.	2	2	2	Alternate years.
342	Lamberton.	2	2	2	331. May be taken by term or by year.
343*	Kent.	3	3	3	
343*A	Kent.	3	3	3	343.
344	Lamberton.	2	2	2	332 or 333. May be taken by term or by year. Alternate years.

\* See note near top of p. 119.

#### DESCRIPTION.

- 331. Lysias, *Selected Orations*; Plato, *Apology* and *Crito*; Euripides, *Iphigenia among the Taurians*. Greek Composition.
- 332. Plato, *Laches*; Euripides, *Medea*; Aristophanes, *Acharnians*; Andocides, *de Mysteriis*. Greek Composition.
- 333. Course in rapid reading. Herodotus, Book II; Lucian, *Vera Historia*, and Dialogues.
- 334. Sophocles, *Oedipus Rex*, and *Oedipus Coloneus*; Pindar; Bacchylides.
- 335. Euripides, *Bacchae*; Thucydides; private reading. Plutarch, *Nicias*; Sophocles, *Ajax*.
- 336. Æschylus, *Agamemnon*; Demosthenes, *Philippics*; private reading. Plutarch, *Pericles*; Sophocles, *Antigone*.
- 337. Theocritus; Plato, *Gorgias*.
- 338. Greek Literature. Jevons, *Greek Literature*, with lectures.
- 339. Greek Life. Blümner, *Life of the Ancient Greeks*, with lectures.
- 340. Demosthenes, *de Corona*.
- 341. Archaeology. Lectures and conferences. Architecture, sculpture, terra cottas, vase painting. History of Greek Archaeology.

342. New Testament: A Gospel and an Epistle of St. Paul.  
 343. } Elementary Greek: a two-year course, covering the  
 343A. } entrance requirements.  
 344. Aristophanes, *Wasps* and *Frogs*.

## HEBREW.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
35 <sup>1</sup>	Clay.	2	2	2	
35 <sup>2</sup>	Clay.	2	2	2	35 <sup>1</sup> .

## DESCRIPTION.

35<sup>1</sup>. For beginners. Exercises in reading and pronunciation. Outlines of the grammar. Reading of historical chapters. Davidson's *Hebrew Grammar*.  
 35<sup>2</sup>. Review of Davidson's *Hebrew Grammar*. Syntax. Reading of selections from historical and poetical books.

## HISTORY.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
36 <sup>1</sup>	McMaster.	2	2	2	Omitted in 1908-09.
36 <sup>2</sup>	<i>Political History of the United States.</i>	2	2	2	See note 1.
36 <sup>3</sup>	McMaster. <i>American Colonial History.</i> Ames.	2	2	2	See note 1.
36 <sup>4</sup>	<i>Medieval History . . .</i> Howland.	2	2	2	See note 1.

NOTE 1.—May be taken in fulfilment of required work.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
365	<i>Europe in the Nine- teenth Century.</i> Linglebach.	2	2	2	See note 1.
366	<i>The United States in the Nineteenth Century. A Study of the Life of the People.</i> McMaster.	2	2	2	Given in 1908-09.
367	<i>The Last Fifty Years.</i> McMaster.	2	—	1	Given in 1908-09.
368	<i>Constitutional His- tory of the Uni- ted States.</i> Ames.	2	2	2	See note 2.
369	<i>The United States and Europe.</i> McMaster.	2	2	2	Alternate years. Omitted in 1908- 09. See note 2.
370	<i>The Civil War and Reconstruction.</i> Ames.	—	2	1	Alternate years. Given in 1908-09. See note 2.
371	<i>History of American Political Ideas.</i> Ames.	2	—	1	Alternate years. Omitted in 1908- 09. See note 2.
372	<i>Roman History, Re- publican Period.</i> Howland.	2	—	1	Alternate years. Omitted in 1908- 09. See note 2.
373	<i>Roman History, Im- perial Period.</i> Howland.	—	2	1	Alternate years. Given in 1908-09. See note 2.
374	<i>Church History.</i> Howland.	2	2	2	Alternate years. See note 2.
375A	<i>English Constitu- tional History, Mediaeval.</i> Cheyney.	3	—	1½	Alternate years. Given in 1908-09. See note 2.

NOTE 1.—May be taken in fulfilment of required work.

NOTE 2.—One of courses 361, 362, 363, 364, 365 is a prerequisite.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
375B	<i>English Constitutional History.</i> <i>Modern.</i> <i>Cheyney.</i>	—	3	1½	Alternate years. Given in 1908-09. See note 2.
376	<i>English Social History.</i> <i>Cheyney.</i>	3	3	3	Alternate years. Omitted in 1908-09. See note 2.
377	<i>England and the Continent.</i> <i>Cheyney.</i>	2	2	2	Alternate years. Omitted in 1908-09. Open only to Juniors and Seniors.
378	<i>Rise of the British Empire.</i> <i>Cheyney.</i>	2	2	2	Alternate years. Given in 1908-09. Open only to Juniors and Seniors.
379	<i>The Renaissance</i> <i>Lingelbach.</i>	2	—	1	Alternate years. Given in 1908-09. See note 2.
380	<i>The Reformation.</i> <i>Lingelbach.</i>	—	2	1	Alternate years. Given in 1908-09. See note 2.
381	<i>Europe from 1648 to 1789</i> <i>Lingelbach.</i>	2	—	1	Alternate years. Omitted in 1908-09. See note 2.
382	<i>The French Revolution and Napoleon.</i> <i>Lingelbach.</i>	—	2	1	Alternate years. Omitted in 1908-09. See note 2.
383	<i>Studies in the History of the Nineteenth Century.</i> <i>Lingelbach.</i>	2	2	2	Alternate years. Omitted in 1908-09. Open only to Juniors and Seniors.

NOTE 2.—One of courses 361, 362, 363, 364, 365 is a prerequisite.

#### DESCRIPTION.

361. *Material Development of the United States 1783-1883.*—This subject comprises (a) lectures, (b) supplementary reading with synopsis of books, speeches and documents, (c) maps and diagrams, (d) essays. The lectures are

confined to the history of the social, economic, financial and industrial growth of our country.

362. *Political Parties, Leaders, Issues, Platforms, 1783-1877.*—

The system followed is the same as in 361; but the subject of the lectures is political history, and not that covered in 361. An elementary knowledge of our political history is expected, the work being chiefly with the sources.

363. *American Colonial and Revolutionary History.*—The beginnings of the American nation; European inheritance; development of American institutions; expansion of English colonies, rivalry of French and English; underlying causes of the Revolution; growth toward independence and union; formation and dissolution of the Confederation. Lectures, collateral reading, map work, etc. An outline is prepared for the class.

364. *Medieval History.*—The history of Europe from 395 to 1300.

The disintegration of the Roman Empire; the German tribes and their settlement in the Empire; the Church and its influence; Charlemagne; feudal institutions; the crusades; the Church at the end of the Middle Ages; commerce and the rise of cities; rise of the modern nations. Text-book, lectures and required reading.

365. *Europe in the Nineteenth Century.*—Europe after the overthrow of Napoleon; the restorations and reaction; the struggle for constitutional government and the rights of nationality; the Greek revolution; the revolutions of 1830 and 1848; the Crimean war and the Eastern Question; Cavour and Italian unification; Bismarck and the founding of the German Empire; France under the Third Republic; the dual monarchy of Austria-Hungary; the expansion of Russia and the far Eastern Question; the partition of Africa, and the main characteristics of contemporary European history. Text-book, lectures and required readings.

366. *The United States in the Nineteenth Century. A Study of the Life of the People.*

367. *The Last Fifty Years.*

368. *Constitutional History of the United States to 1860.*—Preliminary survey of colonial governments and development during colonial and revolutionary periods. Formation of State and Federal Constitutions; growth of nationality; broad *versus* strict construction; influence of the

judiciary; conflict between States and Federal Government; theory and practice of nullification; the slavery struggle; amendments to the Federal Constitution; evolution of State Constitutions. Lectures, special reports and required reading.

369. *The United States and Europe*.—A survey of the chief questions connected with the history of our foreign relations, from the appointment of the Committee on Foreign Relations in the Continental Congress to the present time, with especial reference to the last half century.

370. *The Civil War and Reconstruction*.—The Constitution during the Civil War; theories and actual process of reconstruction; the new amendments and their interpretation; constitutional results of the war; the "undoing" of reconstruction; new problems of the last quarter of the century.

371. *History of American Political Ideas*.—Chief topics: written constitutions, the constitutional convention, the nominating convention, the electoral college, the suffrage, instruction of representatives, development of the executive, legislative and judicial departments, the veto, the right of the judiciary to pronounce on the constitutionality of a legislative act, the initiative and referendum, territorial government, extension of individual rights.

372. *Roman History*.—History of the Roman Republic from the time of the Gracchi (133 B. C.) to the death of Cæsar. Form of the Roman constitution in the second century B. C.; economic and social problems of the Republic; failure of reform movements; rise of imperialism and overthrow of the republican constitution. Lectures, required reading, etc.

373. *Roman History*.—History of the Empire from Augustus to Theodosius. Foundation of the principate and rule of the early emperors; unification of the ancient world; the development of Roman law; spread of Christianity; relations with the Germans; the beginnings of disintegration. Lectures, required readings, etc.

374. *Church History*.—To the beginning of the fifteenth century. Early organization of the Church; the persecutions; Christianity as the state religion; rise of the papacy; monasticism and the conversion of Europe; nature of the medieval Church—its powers, jurisdiction and influence; heresies; the popes at Avignon; the Great Schism. Lectures, required reading, etc.

375A. *English Constitutional History in the Middle Ages*.—Political organization of England in the Anglo-Saxon period; changes introduced by the Norman Conquest, feudalism; the rise of the courts and the jury system; the origin and growth of parliament. This course includes a study of the general history of England down to 1485.

375B. *English Constitutional History in Modern Times*.—This course is a continuation of 375A. It brings the narrative history down to the present time and includes the development of the monarchy under the Tudors, the constitutional struggle under the Stuarts, the development of government by parliament and the cabinet, and the great reforms of the nineteenth century.

376. *English Social History*.—Organization of society in early England; the rural manor, the town gilds, fairs, and foreign trading; popular movements of the fourteenth century; change from medieval to modern times; industrial revolution, and the other principal changes in subsequent periods. Outline study of the general narrative history of England.

377. *England and the Continent*.—Comparison of the economic, political, ecclesiastical, and intellectual development of England with that of the principal continental countries from the thirteenth to the sixteenth century. Chief topics: the Hanse League; the Staple; the Florentine bankers; trade with Venice and the Far East; rise of Parliament and the Estates General; Jacquerie and peasant rebellions of England and Germany; organization of the church; statutes of Provisors and Præmunire; Lollards and Hussites; invention of printing; the renaissance.

378. *Rise of the British Empire*.—England and the growth of her colonies from the sixteenth to the twentieth century; explorations of the period of Elizabeth; growth of the commercial companies; colonial settlements; wars with Holland, Spain and France; Empire of India; attainment of self-government by the colonies; changes in England most closely related to this external development. Lectures and required reading.

379. *The Renaissance*.—Italian city republics; renaissance in Italy, the Medici and Savonarola; the papacy; centralization of governments; geographica! discoveries, changes in trade routes, inventions and displacement of capital; renaissance north of the Alps

380. *The Reformation*.—Economic and ecclesiastical conditions underlying the Reformation; Luther and the Reformation in Germany; wars of religion in France; Counter-Reformation and the Thirty Years' war. Lectures and required reading.

381. *Europe from 1648 to 1789*.—Europe at the Peace of Westphalia; dynastic and colonial aggrandizement; Louis XIV. and the ascendancy of France; rise of Prussia and Russia; diplomatic revolution; Seven Years' war; enlightened despotism; partitions of Poland; Eastern Question. Lectures and required reading.

382. *The French Revolution and Napoleon*.—French society and state before the Revolution; Estates General; the Revolution; foreign wars; Reign of Terror and reaction; constitution of 1795 and the Directory; Napoleon and the establishment of the Empire; imperial institutions; the Napoleonic wars, with special reference to the commercial conflict with England; the overthrow of Napoleon and the treaties of Paris. Text-book, lectures and required reading.

383. *Studies in the History of the Nineteenth Century*.—This course is intended primarily for advanced students. The work consists of lectures, conferences and reports on the most important developments in the history of European countries since 1815. Emphasis will be laid upon topics like the reconstruction of Europe after the fall of Napoleon, the unification of Italy, the establishment of the German Empire, the economic changes of the century, the rise of socialism, the industrial revolution in Russia, the Eastern Question, and the expansion of Europe in Asia and Africa.

## HYGIENE.

No.	Subjects.	Hours a week.		Preparation required, remarks, etc.
		1st Term.	2d Term.	
391	<i>Bacteriology</i> ..... Abbott, Bergey.	I	12	
392	<i>Hygiene</i> ..... Bergey.	I	—	Preliminary to Architecture 33 and 34.

## DESCRIPTION.

391. *Bacteriology*.—Second-year Bacteriology of the Medical Course. Open to men only. For details and roster, see announcements of the Department of Medicine.

392. *Hygiene*.—Lectures, with special reference to application in architectural practice.

## ITALIAN.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
421	Crawford.	2	2	2	Latin 431 or French 282.
422	Rennert.	2	2	2	Italian 421.

## DESCRIPTION.

421. Grandgent's *Italian Grammar*; Goldoni, *La Locandiera*; Bowen, *Italian Reader*; Gherardi del Testa, *L'Oro e l'Orpello*. Prose Composition.

422. De Amicis, *Cuore*; Dante, Selections from the *Inferno* (Cotterill).

## LATIN.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
430*	McCartney.	3	—	1½	
430*A	McCartney.	—	3	1½	
430*B	McCartney.	3	—	1½	
430*C	McCartney.	—	3	1½	
430*D	McCartney.	1	1	1	

\* See note near top of p. 119

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
431A	Rolfe.	3	—	1 $\frac{1}{2}$	
431B	Gibbons.	3	—	1 $\frac{1}{2}$	
431C	Sec. I, McDaniel. Sec. II, Kent.	3	—	1 $\frac{1}{2}$	B, C, D, L, M, or the equivalent courses 430, 430A, 430B, 430C, 430D.
432A	Gibbons.	—	3	1 $\frac{1}{2}$	
432B	McDaniel.	—	3	1 $\frac{1}{2}$	
432 C	Kent.	—	3	1 $\frac{1}{2}$	
432 D	—	—	2	1	Open only to stu- dents taking 432A, 432B or 432C.
33	Rolfe, Gibbons, McDaniel, Kent.	3	3	3	Any two of the courses 431A, 431B, 431C, 432A, 432B and 432C. (Two sec- tions.)
434	Rolfe.	3	—	1 $\frac{1}{2}$	Open to Sopho- mores entitled to take 433 and to all Juniors and Seniors. Omitted in 1908-09.
434A	McDaniel.	3	—	1 $\frac{1}{2}$	Same as for 434.
435	McDaniel.	3	—	1 $\frac{1}{2}$	433. Omitted in 1908-09.
435A	McDaniel.	3	—	1 $\frac{1}{2}$	433. Omitted in 1908-09.
436	Gibbons.	3	—	1 $\frac{1}{2}$	433.
437	Kent.	—	3	1 $\frac{1}{2}$	433. Omitted in 1908-09.
438	Gibbons.	—	3	1 $\frac{1}{2}$	433.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
439	McDaniel.	3	—	1½	433. Omitted in 1908-09.
440	Gibbons.	3	—	1½	433.
441	Rolfe.	—	3	1½	433. Omitted in 1908-09.
442	Gibbons.	—	3	1½	433.
443	Gibbons.	2	2	2	Open to Sophomores who are entitled to take 433, and to all Juniors and Seniors.
443A	Gibbons.	1	1	1	433.
444	Rolfe.	—	3	1½	433. Omitted in 1908-09.
444A	Rolfe.	—	3	1½	433. Omitted in 1908-09.
444B	Rolfe.	—	2	1	433.
445	Rolfe.	—	2	1	433. Omitted in 1908-09.
446	Gibbons.	2	2	2	Open only to students who are taking, or have taken 433. Omitted in 1908-09.
447	McDaniel.	2	2	2	433. Omitted in 1908-09.
448	McDaniel.	2	2	2	433.
449	Kent.	3	—	1½	433. Omitted in 1908-09.

## DESCRIPTION.

430. Elementary Latin.  
 430A. Caesar, *Gallic War*.  
 430B. Cicero, *Orations*.  
 430C. Vergil, *Aeneid*.

430D. Elementary Prose Composition.

431A. Livy.

431B. Cicero, *De Amicitia*. Roman history and antiquities.

431C. Livy and Ovid, Selections.

432A. Cicero, *De Senectute* and *Letters*. Outline of Latin Literature.

432B. Tibullus.

432C. Sallust.

432D. Rapid reading of easy Latin.

433. Horace, *Odes*, *Epodes*, *Satires* and *Epistles*.

434. History of Latin Literature.

434A. The Life and Art of the Romans. Lectures illustrated by the stereopticon.

435. Plautus, selected comedies.

435A. Terence, selected comedies.

436. Cicero, *Tusculanae*. Lives of the Philosophers and their doctrines concerning the constitution of the universe and the nature of the soul.

437. Roman Epic.

438. Juvenal, *Satires*. Roman society in the time of the Twelve Caesars. Horace, *Ars Poetica*; Latin writers on Rhetoric.

439. Catullus.

440. Tacitus, *Agricola* and *Germania*. Provincial policy of the Roman government. Martial, *Epigrams*.

441. Ovid. The *Fasti*, with studies in Roman topography and mythology.

442. Cicero, *De Officiis*. Seneca; Latin works on Ethics and their sources. Lectures on the Latin language.

443. The character and influence of Latin epic and didactic poetry, especially of Vergil and Lucretius; the uses of mythology in literature and art. Lectures and metrical translations.

443A. Expressive reading of Latin prose and verse. See Mulford Prize.

444. Suetonius. Selected *Lives*, with studies in Roman history and political institutions.

444A. Tacitus, selections from the *Histories* and *Annals*.

444B. Caesar, *Civil War*; Sallust, *Jugurtha*.

445. Latin Prose Composition.

446. Latin Prose Composition.

447. Roman Ethics. Lectures and reading of selected passages. The lectures may be taken separately as a one hour course.

448. The Earliest Literature concerning Christianity. Lectures and reading. Minucius Felix, *Octavius*; selected passages from other writers. The lectures may be taken separately as a one-hour course.

449. Roman Tragedy.

## LINGUISTICS.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
451	<i>Linguistics</i> ..... Easton.	—	2	1	Only for those in the third or fourth year of College work.

## DESCRIPTION.

451. Nature and growth of language; roots, stems, inflections, characteristics of various languages and literatures, classification of languages; methods of writing, etc. Whitney, *Language and the Study of Language*. Lectures and recitations.

## MATHEMATICS.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
461	<i>Solid Geometry</i> ..... Fisher, Safford, Chambers, O'Shaughnessy, Geckeler.	—	2	1	A, C.*
462	<i>Plane Trigonometry</i> ..... Fisher, Safford, Chambers, O'Shaughnessy, Geckeler.	2	—	1	A, C.*
463	<i>Algebra</i> ..... Glenn.	4	—	2	A, C.*
464	<i>Analytic Geometry</i> . Glenn.	—	4	2	461 and 462.
465	<i>Differential and Integral Calculus</i> . Fisher.	3	3	3	463 and 464.

\* See p. 85.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
466	<i>Introduction to Modern Higher Algebra.</i> Hallett.	3	—	1½	465.
467	<i>Advanced Plane Trigonometry, and Spherical Trigonometry.</i> Crawley.	—	3	1½	461, 462 and 463.
468	<i>Theory of Algebraic Equations.</i> Hallett.	—	3	1½	466.
469	<i>Solid Analytic Geometry.</i> Crawley.	2	2	2	465 and 466. Alternate years. Omitted in 1908-09.
470	<i>Advanced Plane Analytic Geometry.</i> Crawley.	2	2	2	465 and 466. Alternate years. Given in 1908-09.
471	<i>Differential Equations.</i> Fisher.	2	2	2	465 and 466. Alternate years. Given in 1908-09.
472	<i>Advanced Calculus.</i> Fisher.	2	2	2	465 and 466. Alternate years. Omitted in 1908-09.
473	<i>Quaternions*.....</i> Fisher.	1	1	1	464; should preferably be preceded or accompanied by 465.
474	<i>Infinite Series and Products.</i> Schwatt.	2	2	2	465.
480	<i>Analytic Geometry.</i> Safford, Lambert.	—	3	1½	482.
481	<i>Algebra .....</i> Crawley, Hallett, Evans, Glenn, Chambers, Babb, O'Shaughnessy, Lambert, Shugert.	—	4	2	A, C.†

\* Offered primarily to members of the Junior Class who are candidates for the Faculty Prize for special work in Mathematics. When so taken it does not count towards a degree.

† See pp. 85 and 90.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
482	<i>Plane Trigonometry</i> Safford, Lambert.	3	—	1½	A, C, D.*
483	<i>Plane and Spherical Trigonometry.</i> Crawley, Hallett, Evans, Glenn, Chambers, Babb, O'Shaughnessy, Lambert, Shugert.	4	—	2	A, C, D, E.*
484	<i>Analytic Geometry and Calculus. Part I.</i> Crawley, Fisher, Schwatt, Hallett, Evans, Safford, Chambers, Babb, Glenn, O'Shaugh- nessy.	5	—	2½	481, and 483.
485	<i>The Same. Part II.</i>	—	5	2½	481, 483 and 484.
487	<i>Elements of Calculus, with Applications.</i> Safford, Babb.	2	2	2	482 (or 462), 480.
488	<i>Algebra . . . . .</i> Evans.	3	—	1½	A, C.*
489	<i>Fundamental Principles of Analytic Geometry and Calculus with Applications.</i> Evans.	—	3	1½	D, E,* 488.

\* See pp. 85 and 90.

#### DESCRIPTION.

NOTE.—Subjects 461 to 474 are offered primarily for students in Arts and Science; 480 to 489 for students in the technical courses.

- 461. *Solid Geometry.*—Schultze and Sevenoak's *Geometry*, Books VI, VII, VIII.
- 462. *Plane Trigonometry.*—Crawley's *Short Course in Trigonometry* (the edition with four-place tables).
- 463. *Algebra.*—Fine's *College Algebra*.
- 464. *Analytic Geometry.*—Ashton's *Analytic Geometry*.

465. *Differential and Integral Calculus*.—Granville's *Differential and Integral Calculus*.

466. *Introduction to Modern Higher Algebra*.—Determinants, Resultants, Symmetric Functions, Matrices, Linear dependence, Linear transformations. Lectures and recitations.

467. *Advanced Plane Trigonometry and Spherical Trigonometry*. Crawley's *Elements of Trigonometry* (new and revised edition) supplemented by problem work, outside reading and lectures.

468. *Theory of Algebraic Equations*.—Lectures.

469. *Solid Analytic Geometry*.—C. Smith's *Solid Geometry*.

470. *Advanced Plane Analytic Geometry*.—Homogeneous co-ordinate systems as applied to the study of the Conics. C. A. Scott's *Analytic Geometry*.

471. *Differential Equations*.—Ordinary and partial differential equations. Cohen's *Differential Equations*, and lectures.

472. *Advanced Calculus*.—Review of the fundamental principles with respect to their logical basis; selected topics, with applications; introduction to the theory of analytic functions. Goursat's *Cours d'Analyse*, and lectures.

473. *Quaternions*.—The elements of the theory of quaternions with applications to Geometry and Physics. Lectures. Open to properly qualified students in all courses in the College.

474. *Infinite Series and Products*.—Convergency and divergency of series. Expansion of trigonometric functions of manifold angles into infinite series and products. Hypergeometric series. Series of Fourier and Lagrange.

480. *Analytic Geometry*.—Briggs' *Analytic Geometry*. For students in the Course in Architecture.

481. *Algebra*.—Fisher and Schwatt's *Higher Algebra*. This subject differs from 463 mainly in the fact that more attention is given to the general theory of equations.

482. *Plane Trigonometry*. Crawley's *Elements of Trigonometry* (new and revised edition), and *Tables of Logarithms*. For students in the Course in Architecture.

483. *Plane and Spherical Trigonometry*. Crawley's *Elements of Trigonometry* (new and revised edition), and *Tables of Logarithms*, supplemented by problems and exercises.

484. *Analytic Geometry and Calculus, Part I.*.—Bailey and Woods' *Analytic Geometry*. Granville's *Differential and Integral Calculus*.

485. *Analytic Geometry and Calculus, Part II.*

487. *Elements of Calculus with Applications.*—Snyder and Hutchinson's *Differential and Integral Calculus*. For students in the Course in Architecture.

488. *Algebra*—Fisher and Schwatt's *Higher Algebra*. For Freshmen in the Course in Chemistry.

489. *Fundamental Principles of Analytic Geometry and Calculus with Applications.* For Freshmen in the Course in Chemistry.

## MECHANICAL AND ELECTRICAL ENGINEERING.

No.	Subjects.	Hours a week.		Preparation required, remarks, etc.
		1st Term.	2d Term.	
491	<i>Descriptive Geometry</i> . . . . Spangler, Ehlers, Loos, Nibecker, Jones, Child, G. L. Smith, Adamson, Sagendorph, Smallwood, Barnes.	2	2	
492	<i>Elementary Drawing</i> . . . Fry, Stannard, R. E. Smith, G. H. Smith.	3	3	
493	<i>Mechanical Drawing</i> . . . Fry, Stannard, R. E. Smith, G. H. Smith.	3	3	491, 492 and 495.
494	<i>Working Drawings</i> . . . . Fry, Stannard, R. E. Smith, G. H. Smith.	3	3	493 and 502.
495	<i>Steam Engine</i> . . . . . Spangler, Loos, Nibecker, Jones, Child, Adamson, Barnes.	—	2	
496	<i>Kinematics</i> . . . . . Spangler, Jones, G. L. Smith, Adamson, Sagendorph, Smallwood, Barnes.	3	—	495.
497	<i>Statics</i> . . . . . Spangler, Ehlers, G. L. Smith, Crofoot, Freeman, Sagendorph, Barnes, Stannard.	3	2	618 and 485.

No.	Subjects.	Hours a week.		Preparation required, remarks, etc.
		1st Term.	2d Term.	
498	<i>Hydraulics</i> .....	—	3	618 and 485.
	Stanford, Crofoot, Loos, Nibecker, Jones, G. L. Smith, Bark, Smallwood.			
499	<i>Hydrodynamics</i> .....	2	2	497, 498.
	Stanford, Loos, Ni- becker, Jones, Bark, Crofoot.			
500	<i>Shop Work</i> .....	6	3	
	Morris, Mellor, Sut- phen, Bloemker, Mur- phy, Hall, Krewson, Fawkes, Applin, Bourn, Lawley.			
501	<i>Shop Work</i> .....	3	3	
	Morris, Mellor, Sut- phen, Bloemker, Mur- phy, Hall, Krewson, Fawkes, Applin, Bourn, Lawley.			
502	<i>Advanced Shop Work</i> ..	6	6	491, 492, 495, 500.
	Morris, Mellor, Sut- phen, Bloemker, Mur- phy, Hall, Krewson, Fawkes, Applin, Bourn, Lawley.			
503	<i>Advanced Shop Work</i> ..	3	3	492, 495, 501
	Morris, Mellor, Sut- phen, Bloemker, Mur- phy, H ll, Krewson, Fawkes, Applin, Bourn, Lawley.			
504	<i>Engine Calculations</i> ..	2	—	493, 495, 497, 502 or 503, 508, 618, 92, 103.
	Stanford, Nibecker, Jones, Child, Bark, Freeman, Smallwood.			
505	<i>Engine Design</i> .....	—	2	504.
	Stanford, Nibecker, Bark, Freeman.			

No.	Subjects.	Hours a week.		Preparation required, remarks, etc.
		1st Term.	2d Term.	
506	<i>Boiler Calculation</i> .... Stanford, Loos, Ni- becker, Child, Bark, Crofoot, Freeman.	2	—	Same as 504.
507	<i>Boiler Design</i> .... Stanford, Loos, Child, Crofoot.	—	2	506.
508	<i>Graphics</i> .... Spangler, Stanford, Loos, Child, Bark, Adamson, Fry.	5	—	493, 496, 618.
509	<i>Thermodynamics</i> .... Spangler, Ehlers, Cro- foot, Loos, Nibecker, Bark, Sagendorph, Smallwood.	—	3	495, 485, 618.
510	<i>Applied Thermodynam- ics.</i> Spangler.	2	2	509.
511	<i>Mechanical Laboratory.</i> Ehlers, Loos, Child, G. L. Smith, Adam- son, Freeman, Sagen- dorph, Barnes.	3	3	493, 496, 502 or 503, 485.
513	<i>Advanced Mechanical Laboratory.</i> Stanford, Bark, Cro- foot, Freeman.	3	3	497, 498, 508, 511 and concurrent with 510.
514	<i>Advanced Mechanical Laboratory.</i> Ehlers, Nibecker, Jones, Crofoot, Small- wood.	6	3	497, 498, 508, 511, and concurrent with 510.
515	<i>Marine Engines</i> .... Spangler, Ehlers.	1	1	493, 495, 485.
516	<i>Naval Architecture</i> .... Spangler, Ehlers.	1	1	Same as 515.

No.	Subjects.	Hours a week.		Preparation required, remarks, etc.
		1st Term.	2d Term.	
517	<i>Machine Design</i> ..... Fry, Stannard, R. E. Smith, G. H. Smith.	3	3	494, 496, 497, 502 or 503, 508.
518	<i>Shop Visits</i> ..... Spangler, Nibecker, Bark, Crofoot, Free- man.	3	—	511, 521.
519	<i>Specifications</i> (volun- tary). Spangler.	—	1	205 (1st term).
520	<i>Mechanical Thesis</i> .....	—	9	498, 504, 506, and con- current with 510, 513 or 514, and with 517.
521	<i>Electrodynamics</i> ..... Temple, Richhart, Brackett, Bauder, Bickford, Pollock, Bearce, Kammerman.	2	2	619.
522	<i>Telegraphy and Tele- phony</i> . Bauder, Bickford, Pollock.	2	2	619.
523	<i>Alternating Currents</i> ... Temple, Richhart, Brackett, Bauder, Bickford, Pollock, Bearce, Kammerman.	2	2	619 and 485.
524	<i>Advanced Electrody- namics</i> . Temple, Richhart, Brackett, Bickford, Bauder, Bearce, Kammerman.	3	—	521.
525	<i>Electrical Measure- ments</i> . Richhart, Brackett, Bickford, Bauder, Bearce, Kammerman.	2	—	521, 529.
526	<i>Dynamo Design</i> ..... Temple.	—	2	521, 524, 485.

No.	Subjects.	Hours a week.		Preparation required, remarks, etc.
		1st Term.	2d Term.	
527	<i>Alternating Current Applications.</i> Temple, Richhart.	2	2	521, 523.
528	<i>Electricity and Magnetism.</i> Temple, Richhart, Brackett, Bickford, Bauder, Bearce, Kammerman.	—	2	619.
529	<i>Electrical Laboratory . . .</i> Temple, Richhart, Bauder, Bickford, Pollock, Bearce, Kammerman.	3	6	619, and concurrent with 521.
531	<i>Electrical Testing . . .</i> Temple, Richhart, Brackett, Bickford, Kammerman.	3	—	523, 529, and concurrent with 525.
532	<i>Electrical Testing . . .</i> Temple, Brackett, Bauder, Bearce.	6	—	529, and concurrent with 525 and 527.
533	<i>Electrical Thesis . . .</i>	—	9	524, 525 and concurrent with 531 or 532, and with 528.
539	<i>Applied Electricity . . .</i> Temple, Richhart, Brackett, Bickford, Kammerman.	2	2	619.
540	<i>Steam Engines and Boilers.</i> Stanford, Nibeker, Crofoot, Freeman.	2	2	618.

## DESCRIPTION.

491. *Descriptive Geometry.*—Problems worked out to scale in the drawing-room. Faunce's *Descriptive Geometry*.

492. *Elementary Drawing.*—Use of instruments. Making simple mechanical drawings from working sketches. Freehand lettering.

493. *Mechanical Drawing*.—Continuation of 492. Sectioning, tinting and tracing detail drawings made from sketches. Blue printing. Machine sketching.

494. *Working Drawings*.—Making complete tracings of assembly drawing and details from sketches. Kinematic design.

495. *Steam Engine*.—Nomenclature of steam machinery. General principles of the construction of machines. Power measurement.

496. *Kinematics*.—Laws of motion. Combinations of pure mechanism. Pulleys and belts. Trains of gearing and forms of teeth of wheels. Link work, epicyclic trains, etc.

497. *Statics*.—Application of the principles of statics to rigid bodies. Elasticity and strength of materials. Forms of uniform strength. Design of beams, columns and shafts. Combined and repeated stresses.

498. *Hydraulics*.—Transmission of pressures. Determining centers and amount of pressure. Depth of flotation and stability. Flow through orifices, over weirs, through tubes, pipes and conduits. Water meters and the measurement of water-power.

499. *Hydrodynamics*.—Theory of turbines and water wheels and turbine design.

500. *Shop Work*.—Elements of machines, wood working and forging. Collateral reading and monthly examinations.

501. *Shop Work*.—Short course for Chemical Engineering students only.

502. *Advanced Shop Work*.—Pattern making. Use of machine tools. Principles of foundry practice. Laying out work.

503. *Advanced Shop Work*.—Short course for Chemical Engineering students only.

504. *Engine Calculations*.—Determining the proper proportions for cylinders, valves, piston rods, shafts, fly wheels, etc. The design of the principal parts of an engine of a particular type, calculating where a question of strength enters, and following the chosen type for proportions that are determined solely from experience.

505. *Engine Design*.—Completion of calculation and making assembly and working drawings of details.

506. *Boiler Calculation*.—Value of fuels, determination of proper proportions for grate and heating surfaces, height of chimney, thickness of shell, size of braces, etc.; the work following the general lines of course 504.

507. *Boiler Design*.—Working out details of boilers and making working drawings.

508. *Graphics*.—Principles of graphic statics and their application to cranes, bridges, roof trusses and other framed structures. The graphics of machinery with and without friction, graphic combination of stresses in shafts, etc.

509. *Thermodynamics*.—Mechanical theory of heat. Work done and heat expended in expansion. Cycles of perfect gases and vapors. Expansion of steam, ammonia and carbonic acid, work done and heat required. Mixtures of vapors.

510. *Applied Thermodynamics*.—Heat engines, various efficiencies. Commercial results obtained and possibilities of development of steam, air, gas and oil engines. Refrigerating machines using air, ammonia, carbonic acid, etc. Flow of steam, injectors and condensers.

511. *Mechanical Laboratory*.—Testing mechanical apparatus. Adjusting scales, indicators, counters, gauges, etc. Determining the efficiency of various machines and the values of the materials of construction.

513. *Advanced Mechanical Laboratory*.—For Electrical Engineering students only.

514. *Advanced Mechanical Laboratory*.—Testing steam, gas and air engines, and boilers, determining duty of pumps, injectors, air compressors, measurement of flow of steam, calorimetric work.

515. *Marine Engines*.—History. Details of marine boilers, engines and accessories. Propulsion, safety devices, management of marine machinery. Compound and triple expansion engines.

516. *Naval Architecture*.—Displacement, stability, strength of structure, power required, water lines, fineness, etc.

517. *Machine Design*.—Applications of the principles of machine design to special machinery.

518. *Shop Visits*.—Students are required to visit machine shops, foundries, ship yards, and electric power stations; and

to make reports on the general arrangement of plant, power distribution, handling of materials, etc., and on special tools and processes.

519. *Specifications*.—Methods of drawing specifications for engines, boilers, foundations, etc. Making estimates as to cost, weight, etc.

520. *Mechanical Thesis*.—Special work in Mechanical Laboratory.

521. *Electrodynamics*.—The construction of commercial instruments and of direct and alternating current dynamos and motors.

522. *Telegraphy and Telephony*.—Telegraph and telephone systems; duplex, quadruplex, multiplex, printing and messenger service telegraphs and signal systems. Simple, multiple and common battery telephone systems. Recitation; and drawing of diagrams of connections for various systems and switchboards, illustrated by modern apparatus and laboratory work in making connections.

523. *Alternating Currents*.—Time constant, impedance, reactance, lag, Fourier's expansion, form factor, measurement of power, currents in circuits having inductance and capacity.

524. *Advanced Electrodynamics*.—Principles and construction of motors, arc and incandescent lamps, secondary cells, transformers, photometry, circuits and meters.

525. *Electrical Measurements*.—The study of electrical and magnetic measurements and laboratory methods.

526. *Dynamo Design*.—Study of principles, and the development on the drawing board of a design of armature, commutator and field magnets, for a dynamo or motor.

527. *Alternating Current Applications*.—Mutual inductance, synchronous motors, parallel running, polyphase currents, rotating field, induction motors, power transmission and alternating networks.

528. *Electricity and Magnetism*.—A study and review of phenomena, principles and laws, and the derivation of units.

529. *Electrical Laboratory*.—Elementary measurement of resistance, potential and current, and calibration of commercial instruments.

531. *Electrical Testing*.—For Mechanical and Chemical Engineering students only.

532. *Electrical Testing*.—Measurement of insulation resistance, capacity, induction, etc. Testing direct and alternating current dynamos, motors and transformers. Power measurements. Photometry.

533. *Electrical Thesis*.—Special work in Electrical Laboratory.

539. *Applied Electricity*.—Electricity and magnetism, as applied to industrial electrical apparatus and installations. For Civil Engineering students only.

540. *Steam Engines and Boilers*.—Short course for Civil Engineering students only.

## MUSIC.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
541	<i>Harmony, Thorough-bass.</i> Clarke.	2	2	—	
542	<i>Melody, Rhythm, Strict Counter-point.</i> Clarke.	2	2	—	541. Candidates who can pass an examination in Harmony may be admitted to this course.
543	<i>Larger "Forms," Suite, Modern Counterpoint.</i> Clarke	2	2	—	542. Open to candidates who can pass an examination in 542.
544	<i>The Orchestra . . . .</i> Clarke.	2	2	—	543. Open to candidates who can pass an examination in 543.

## DESCRIPTION.

541. *First Year*.—Harmony, intervals, scales (major). Chords of major scales; their progressions and inversions. Minor scale. Relation of scales. Dissonant groups;

their origin, formation and progression. Modulation or transition. The course includes all that is embraced in the study of Harmony or Thoroughbass.

542. *Second Year*.—Melody. Rhythm. The harmonic basis of melody. The use of dissonances foreign to the harmony, *i. e.*, changing notes, passing notes, suspensions, retardations. Lyric or dance "form." The simpler forms developed from the Lyric. The origin of Strict Counterpoint. The rules for the combination of independent parts in the five species of Counterpoint, in two, three and four parts. Double Counterpoint.

543. *Third Year*.—Larger "Forms," Suite, Sonata, developed Rondo. Modern Counterpoint. Five species in two, three and four parts. "Imitation" Fugue (Real and Tonal), Fugue with Counter-subject. Canon.

544. *Fourth Year*.—The Orchestra. Compass and character of orchestral instruments. Rules for their combinations, with and without voices. Analysis of scores. Scoring for various combinations.

Under an agreement which the University has made with the Combs Broad Street Conservatory of Music, candidates for the degree of "Bachelor of Music" at the University may have their compositions performed by the Conservatory Symphony Orchestra or Conservatory Choir, at the discretion of the head of the department of music of the University and the director of the Conservatory. Pupils in all departments of the University may attend, without charge, the Conservatory faculty concerts, pupils' recitals, lectures, and those having the requisite requirements, the women's and men's choral classes and the Conservatory Choir and Orchestra. Women who have been matriculated for the "University Course in Music" may reside in the Conservatory dormitories.

#### PEDAGOGY.

See under *Philosophy*.

#### PHILOSOPHY AND PEDAGOGY.

No subject under these titles can be taken before a student's second year in College.

## PHILOSOPHY.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
561	<i>Logic</i> ..... Singer.	2	—	1	
562	<i>Ethics</i> ..... Flaccus.	—	2	1	
563	<i>History of Ancient Philosophy.</i> Newbold.	2	2	2	
564	<i>History of Modern Philosophy.</i> Singer.	2	2	2	
565	<i>Philosophy of Nature,</i> Singer.	2	—	1	
566	<i>Philosophy of Nature.</i> Singer.	—	2	1	
567	<i>Contemporary Moralists.</i> Flaccus.	2	2	2	
568	<i>Readings in Ancient Philosophy.</i> Newbold.	2	—	1	
569	<i>Readings in Modern Philosophy.</i> Singer.	—	2	1	
570	<i>Analysis of Ethical Theories.</i> Flaccus.	2	2	2	
571*	<i>History of Aesthetics.</i> Flaccus.	—	2	1	

\* Note.—This course is designed to follow upon, but does not presuppose, Psychology, 587.

## DESCRIPTION.

## PHILOSOPHY.

561. *Logic*.—Lectures and recitations.

562. *Ethics*.—A sketch of the history of ethical theory, designed as an introduction to the study of ethics. Lectures.

563. *History of Ancient Philosophy*.—Lectures, with readings from selected sources.

564. *History of Modern Philosophy*.—Lectures, with readings from selected sources.

NOTE.—In the years in which either 563 or 564 is omitted, a similar course is offered to graduate students and is open to undergraduates.

565. *Philosophy of Nature*.—Types of ancient and medieval conceptions of nature.

566. *Philosophy of Nature*.—Development of the modern sciences.

567. *Contemporary Moralists*.—Lectures and discussions. The work of the year 1908-09 will be a study of hedonism and evolutionism.

568. *Readings in Ancient Philosophy*.—The texts selected will vary from year to year.

1908-09. Selections from Lucian, Plutarch, Philostratus and other writers, illustrating the state of religious sentiment in the first three centuries after Christ.

569. *Readings in Modern Philosophy*.—The texts selected will vary from year to year.

NOTE.—568 and 569 may be taken as courses introductory to the study of philosophy.

570. *Analysis of Ethical Theories*.—Based upon Sidgwick, *Methods of Ethics*.

571. *History of Aesthetics*.—Designed as an introduction to the history of aesthetics. It aims at such a gathering of material as would permit (1) the statement of typical theories, (2) the history of their conflict and development, and (3) the discussion of their reduction. Lectures and sources.

#### PEDAGOGY.

No.	Subjecta.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
591	<i>Pedagogy</i> ..... Yocom.	2	2	2	

#### PEDAGOGY.

591. *Pedagogy*.—This course describes general educational principles from the viewpoint of the student and the citizen as well as from that of the teacher. It treats of the educational aim, the means and limits to its realization, the subject-matter of instruction, and the basis for effective educational method.

## PHYSICS.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
600	<i>Elementary Physics.</i> Hough, Hart, Brown, Hodges.	5	5	—	Lectures and recita- tions, 3 hours, labora- tory 2 hours. Open only to Bio- logical students of the two-year spe- cial course.
601	<i>General Physics . . .</i> Cope, Harkins, Brown, Dutcher.	3	3	2	Mathematics F* or 462.
602	<i>Physical Measure- ments.</i> Hough, Barker, Harper, Cope, Harkins, Brown, Boehm, Eckhardt, Dutcher, Hodges, McGinnis.	4	4	2½	601, 620, or 618 and 619. Methods 1 hour, laboratory 3 hours. (Some sec- tions of this course begin in the second term.)
603	<i>Advanced Labora- tory Work.</i> Harper.	3 or 6	3 or 6	1½ or 3	602, and Mathemat- ics 465, and must be preceded or ac- companied by 604- 607.
604	<i>Harmonic Motion and Sound.</i> Richards.	2	—	1	601, and Mathemat- ics 464, and must be preceded or accom- panied by Mathe- matics 465. Alter- nate years.
605	<i>Physical Optics . . .</i> Richards.	1	3	2	604. Alternate years.
606	<i>Theory of Heat . . .</i> Hart.	2	—	1	Same as 604. Alter- nate years.
607	<i>Electricity and Magnetism.</i> Richards.	1	3	2	Same as 604. Alter- nate years.
608	<i>Theoretical Dynam- ics.</i> Goodspeed.	2	2	2	601, 610, and Mathe- matics 465. It is desirable that Mathe- matics 471 accom- pany or pre- cede this.

\* See p. 91.

No.	Subjects.	Hours a week:		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
609	<i>Theory of Potential</i> . Goodspeed.	2	—	1	601, and Mathematics 465. It is desirable that Mathematics 471 accompany or precede this.
610	<i>Elementary Dynamics</i> . Harper.	2	—	1	Mathematics 462.
618	<i>Dynamics, Sound, Heat, and Light</i> . Goodspeed, Hart, Brown, Eckhardt, Dutcher, Hodges.	2	2	2	Entrance Physics, and Mathematics E or 462.
619	<i>Electricity and Magnetism</i> . Hough, Barker, Harper, Harkins Boehm, McGinnis.	3	—	1½	618 and Mathematics 483.
620	<i>General Physics</i> ... Boehm.	3	3	3	Entrance Physics, and Mathematics E or 462.
626	<i>Analytic Mechanics</i> . Richards, Barker, Harper, Cope, Harkins.	2	2	2	(This subject begins in the second term.) 618. Must be accompanied by Mathematics 485.
627	<i>Special Topics in Physics</i> . Goodspeed.	2	2	2	620, 602.

## DESCRIPTION

*General Remarks.*—Course 601 constitutes the required work in Physics, and is preliminary to all other courses. 620, or 618 and 619, may be substituted for it. Students electing Physics are advised to take 610 the same year as 601, as a desirable introduction to the other courses, and to begin 602 on the completion of 610.

600. *Elementary Physics*.—A course covering the Physics required for admission to the Department of Medicine.

601. *General Physics*.—Descriptive Physics, lectures and recitations.

602. *Physical Measurements*.—The theory and practice of quantitative laboratory methods. Lectures and practical laboratory work.

603. *Advanced Laboratory Work*.—Experimental Physics.

604 to 607.—These subjects treat of special departments of Physics. They consist of experimental lectures and recitations, with an introduction to the mathematical theory.

608. *Theoretical Dynamics*.—Chiefly problems involving selected topics in both Statics and Kinetics.

609. *Theory of Potential*.—The law of inverse squares in its various applications to Physics.

610. *Elementary Dynamics*.—A course in the fundamental principles of Dynamics, without the use of higher mathematics. Introductory to 608.

618 to 627.—These subjects are primarily for students in the technical courses.

## POLITICAL SCIENCE.\*

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
631	<i>Constitutional Law</i> . Young, Pierson, Milner, Barnes, Sterritt, L. John- son.	2	2	2	
632	<i>Citizenship: Federal and State</i> . Rowe, Jones.	2	2	2	631.
634	<i>City Government and City Problems</i> . Rowe, Giesecke.	2	2	2	631.
635	<i>Labor Legislation</i> .. Young.	2	2	2	631.

\* Courses 631, 632, 634, 635, 636, 638, 651 and 653 are the only courses in Political Science open to Arts and Science students as elective or group subjects. For courses in Political Science open *only* to Wharton School students, and for a description of all courses in Political Science, see WHARTON SCHOOL OF FINANCE AND COMMERCE (pp. 259-270).

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
636A	<i>Election Methods and Systems.</i> Giesecke.	—	2	1	631.
636B	<i>Political Parties . . .</i> Giesecke.	2	—	1	631.
638	<i>International Law . . .</i> Rowe, Jones.	2	2	2	631.
642	<i>Blackstone . . . .</i>	2	2	2	
651	<i>Government Regulation of Commerce and Industry.</i> Pierson.	2	2	2	631
653	<i>Comparative Federal Government.</i>	2	2	2	631. Omitted in 1908-09.

## PSYCHOLOGY.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
581	<i>General Psychology.</i> Witmer.	2	—	1	
582	<i>Analytic Psychology.</i> Twitmyer.	3	—	1	
583	<i>Physiological Psychology.</i> Twitmyer.	—	3	1	
584	<i>Genetic Psychology.</i> Twitmyer.	3	3	2	582 or 583.
585	<i>Experimental Psychology.</i> Witmer, Twitmyer, Urban.	3 or 5	3 or 5	2 or 3	582.
586	<i>Abnormal Psychology.</i> Witmer.	—	2	1	
587	<i>Aesthetics.</i> Witmer.	2	—	1	
588	<i>Child Psychology.</i> Holmes.	—	2	1	

## DESCRIPTION.

## PSYCHOLOGY.

581. *General Psychology*.—An elementary outline of the more important facts and theories concerning the human mind; the relation of the problems of modern psychology to certain of the other sciences, the arts and education. Lectures.

582. *Analytic Psychology*.—An introspective and experimental analysis of perception; the role of apperception, memory, attention and association; perceptions of space; the sense organs; the physical stimuli or objects of perception. One hour lecture, two hours laboratory work.

583. *Physiological Psychology*.—Mind and body; the nature of voluntary automatic and reflex movements; inherited instincts and acquired habits, impulse and emotion; the structure and functions of the human nervous system. Dissection of the brain and experimentation upon voluntary and reflex movements. One hour lecture, two hours laboratory work.

584. *Genetic Psychology*.—Development and organization of the individual mind; permanent effects of sensation and movement upon the brain; sensory after-images; memory images; cerebration and association; organization of imagination and memory; the development of ideas, the intellect and reason; the growth of attention and the individual will. One hour lecture, two hours laboratory work.

585. *Experimental Psychology*.—Outline of methods and results of measurement of mental processes. Problems assigned from the following topics: qualitative analysis of sensation-complexes, memory and simpler emotions; psycho-physical methods and laws; specific sense energies; rate and force of voluntary movements; time of sensory-motor reaction, discrimination, association, etc.; variations in physiological processes affected by mental conditions. Lectures and laboratory work.

586. *Abnormal Psychology*.—The nature of hallucination, delusion, and illusion; suggestibility, automatism, and hypnotism; double consciousness and the development of secondary personalities: telepathy or thought transference; mental and emotional variability in relation to individual and race development; degeneration and arrest or retardation of mental development. Lectures.

587. *Aesthetics*.—The relation of feeling and the affective processes to other mental processes; the analysis of the sense of beauty, presenting the psycho-physical characteristics of aesthetic pleasure; the stimuli or objects of aesthetic appreciation. Lectures.

588. *Child Psychology*.—An outline of the phenomena of mental development during infancy, childhood, and adolescence. Lectures.

### SANSKRIT.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
661	Easton.	2	2	2	Alternate years. Omitted in 1908-09.
662	Easton.	2	2	2	661. Alternate years.

### DESCRIPTION.

Only for those proposing to continue the study for two years.

661. Whitney's *Sanskrit Grammar*; Lanman's *Reader*.

662. Lanman's *Reader*, continued.

### SOCIOLOGY.\*

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
191	<i>Social Economy</i> ... Mussey.	2	2	2	
192	<i>Social Reformers</i> ... Mussey.	2	2	2	191.
193	<i>Charities</i> ..... Kelsey.	2	2	2	191.
194	<i>Sociology</i> ..... Kelsey.	2	2	2	191, and 192 or 193.
195	<i>American Social Problems</i> .	2	2	2	191, and 192 or 193.
196	<i>Criminology</i> .....	2	2	2	Omitted in 1908-09.
198	<i>Sociological Field Work</i> . Kelsey.	—	—	—	Omitted in 1908-09.

\* Courses 191, 192, 193, 194, 195 and 198 are the only courses in Sociology open to Arts and Science students as elective or group subjects. For courses in Sociology open only to Wharton School students, and for a description of all courses in Sociology, see WHARTON SCHOOL OF FINANCE AND COMMERCE (pp. 252-270).

## SPANISH.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
671	Crawford.	3	3	3	Latin 431 or French 282.
672	Rennert.	2	2	2	Spanish 671.

## DESCRIPTION.

671. Hills & Ford, *Spanish Grammar*; Le Sage, *Gil Blas de Santillana*; Alarcón, *Novelas Cortas*; Echegaray, *O Locura ó Santidad*.

672. Alarcón, *El Sombrero de tres Picos*; Cervantes, *Don Quixote*, selections ed. by Ford; Valera, *Pepita Jiménez*.

## ZOOLOGY.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
681	<i>General Zoology</i> . . . Montgomery, Moore, Calvert, Lillie, Kribs.	3	3	2	
682	<i>Invertebrate Zoölogy</i> . Calvert, Dougherty.	3	3	2	
683	<i>Mammalian Anatomy</i> . Moore, Kribs.	6	—	2	
684	<i>Vertebrate Morphology</i> . Moore, Kribs.	—	6	2	683.
685	<i>General Physiology</i> . Lillie.	6	6	4	681 or 682.
686	<i>Embryology and Histology</i> . Montgomery.	6	6	4	683 and 684 in a previous or the same year.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
687	<i>Recent and Fossil Vertebrata.</i> Moore.	4	4	3	684. Primarily for graduates. Omitted in 1908-09.
688	<i>Comparative Embryology of the Vertebrata</i> Moore.	6	6	4	684 and 686. Primarily for graduates. Given in alternate years with 687. Omitted in 1908-09.
689	<i>Anatomy and Embryology of the Invertebrates.</i> Montgomery, Calvert.	6	6	4	682 and 686. Primarily for graduates.
690	<i>Cytology</i> ..... Montgomery.	6	6	4	686. Primarily for graduates. Omitted in 1908-09.
691	<i>Entomology</i> ..... Calvert.	3	3	2	681 or 682.
693	<i>Protozoa</i> .....	3	3	2	Omitted in 1908-09.
695	<i>Dynamics of Living Matter.</i> Lillie.	2	2	2	685.
	<i>Zoological Seminary.</i>				

## DESCRIPTION.

681. *General Zoology*.—Introduction to classification, morphology, physiology and natural history. Fundamental properties of animals. General anatomy and physiology. Relations of animals to their physical and organic environment. Types of reproduction. Principles of development, heredity and evolution. The work is conducted in the laboratory and vivarium.

682. *Invertebrate Zoology*.—Representatives of various groups of invertebrate animals are studied in the laboratory and vivarium with reference to their structure, functions, life history and classification.

683. *Mammalian Anatomy*.—Comparative morphology of the Mammalia, based upon the study of the anatomy of the cat. Attention is given to anatomical technique. Lectures, demonstrations and laboratory work.

684. *Vertebrate Morphology*.—Comparative morphology of the Vertebrata exclusive of the mammals. Lectures and laboratory work. The work is designed for prospective students in Medicine, as well as for those intending to teach or to pursue researches in this field.

685. *General Physiology* —The processes occurring in living matter, and especially those common to all organisms. Physical and chemical factors in the activities of organisms. Physiology of metabolism, movement and development. This course is intended to lay a foundation for modern experimental work in biology, as well as to serve as an introduction to courses dealing with the special physiology of man. Lectures and laboratory.

686. *Embryology and Histology*.—A study of the development and microscopical anatomy of tissues and organs. (a) Structure of cells and tissues. (b) Germ cells, maturation, fertilization, cleavage. (c) Special histology and embryology of vertebrate organs.

687. *Recent and Fossil Vertebrata*.—Advanced study of the comparative anatomy, taxonomy and paleontology of the Vertebrata. Anatomical features, geological and geographical distribution and phylogenetic relationships of the more important families.

688. *Comparative Embryology of the Vertebrata*.—Advanced course on the development of different classes of the Chordata. Lectures and laboratory.

689. A and B. *Anatomy and Embryology of the Invertebrata*.— Advanced course on the structure, development and phylogenetic relationships of various groups of Invertebrata, exclusive of Protozoa and Insecta. This course extends over two years, the work of one year (A) including the unsegmented forms, and that of the next year (B) the segmented forms.

690. *Cytology*.—Advanced course on cell structure and development, division, maturation, conjugation, fertilization, differentiation, regeneration, sex determination.

691. *Entomology*.—The anatomy, physiology, development and classification of insects, including also some reference

to the means of checking the ravages of injurious species.

**693. *The Protozoa.***—The structure, development, and physiology of the unicellular organisms are treated in their bearing on numerous problems of general interest. Special attention is devoted to parasitism and the production of disease by Protozoa.

**695. *Dynamics of Living Matter.***—The physico-chemical constitution of living matter; the colloidal state and its relation to fundamental physiological processes; enzyme-action, nutrition, respiration and growth; production and transformation of energy of living matter; relation of electrolytes to various vital processes; general effects of external agencies (heat, light, electricity, etc.) on living matter and developmental processes; activities and reactions of the organism considered as a whole (tropisms, instincts, etc.).

**Zoological Seminary.**—An organization of the instructors and advanced students for the presentation of research, and reports upon current biological literature.

**THE WHARTON SCHOOL OF FINANCE AND  
COMMERCE.**

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The subjects offered in the Wharton School of Finance and Commerce are arranged under three main heads:

- \* **ECONOMICS:** including Economic Science, Finance, Transportation, Insurance, Commerce, Industry, and Accounting.
- \* **POLITICAL SCIENCE.**
- \* **SOCIOLOGY.**

**ECONOMICS.**

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
161	<i>Political Economy.</i> Nearing, Watson, Seiler.	2	2	2	
162	<i>Advanced Economics.</i> Patten	2	2	2	161.
163	<i>English Civilisation</i> Patten.	2	2	2	162, or 164, or 165 and 166.
164	<i>Economic Progress in the Nine- teenth Century.</i> Nearing.	2	2	2	161.
165	<i>The Tariff and Inter- national Trade.</i> Watson.	2	2	2	161.
166	<i>Rise of Modern In- dustry.</i> Watson.	—	2	1	161.
167	<i>Economic Problems.</i> Nearing.	2	2	2	161.

\* The courses enumerated below under these heads are open to Wharton School students *only*. For courses open to Arts and Science students as elective or group subjects, see pages as follows: Economics, p. 196; Political Science p. 244; Sociology, p. 247.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
171	<i>Earth and Man . . .</i> Tower.	2	2	2	
172	<i>Political Geography.</i> G. G. Huebner.	2	2	2	
173	<i>Climate and Civiliza- tion.</i> Tower.	2	2	2	Omitted in 1908-09.
175	<i>Economic Condi- tions of South America.</i> J. R. Smith.	2	2	2	181.
181	<i>Commercial and Economic Geog- raphy.</i> J. R. Smith.	2	2	2	171 or 172.
182	<i>American Commerce</i> G. G. Huebner.	2	2	2	171 or 172.
183	<i>Stock and Produce Exchanges.</i> S. Huebner.	2	2	2	171 or 172.
184	<i>Transportation . . .</i> Johnson, G. G. Huebner.	2	2	2	171 or 172.
185	<i>Railway Rates and Traffic.</i> Johnson.	2	2	2	184. Alternate years, beginning in 1906- 07.
186	<i>Organization of In- ternational Trade.</i> J. R. Smith.	2	2	2	171.
187	<i>Ocean Transporta- tion.</i> Johnson.	2	2	2	161, 171, 184.
188	<i>Brokerage . . . .</i> S. Huebner.	2	2	2	Open to Juniors and Seniors.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
189	<i>History of American Commerce.</i> Johnson.	—	2	1	171 or 172.
201	<i>Accounting . . . . .</i> Mitchell, Hardt, Wykes, Rossheim.	3	3	3	
202	<i>American Industry . . . . .</i> Holdsworth.	2	2	2	181.
203	<i>Industrial Management.</i> J. R. Smith.	2	2	2	202.
204	<i>Field Work in Industry.</i> J. R. Smith.	2	2	2	203. Open to Juniors and Seniors.
205	<i>Business Law . . . . .</i> Sullivan, Pierson, Barrett, Barnes, Deeter, Sterritt.	2	2	2	
205A	<i>Advanced Business Law.</i> Sullivan.	2	2	2	205.
206	<i>Advanced Accounting and Auditing.</i> Moxey.	3	3	3	201.
207	<i>Practical Accounting Systems.</i> Moxey.	2	2	2	201.
208	<i>C. P. A. Course . . . . .</i> Moxey.	2	2	2	206
210	<i>Life Insurance . . . . .</i> S. Huebner.	2	2	2	161.
211	<i>Fire, Marine and Fidelity Insurance.</i> S. Huebner.	2	2	2	210.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
212	<i>Insurance Organisation, Practice and Law.</i> S. Huebner.	2	2	2	210.
213	<i>Insurance.....</i> S. Huebner.	2	2	2	161.
214	<i>Investments .....</i> Meade.	3	3	3	217, 219.
216	<i>Banking.....</i> Mitchell.	2	2	2	217.
217	<i>Money, Credit and Foreign Exchange.</i> Meade, Conway.	2	2	2	Must be taken with or after 161, 171 and 201.
218	<i>Public Finance....</i> Barnes.	2	2	2	
219	<i>Corporation Finance</i> Meade.	3	3	3	217.
221	<i>Marketing of Products.</i> Conway.	2	2	2	202.
225	<i>Real Estate .....</i> Conway.	3	3	3	For Juniors.
226	<i>Private Finance...</i> Conway.	2	2	2	217.
655	<i>Secretarial Work...</i> Milner.	3	3	1½	

## POLITICAL SCIENCE.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
631	<i>Constitutional Law.</i> Young, Pierson, Milner, Barnes, Sterritt.	2	2	2	

No.	Subjects.	Hours a week.		Units of Work.	Preparation required. remarks, etc.
		1st Term.	2d Term.		
632	<i>Citizenship: Federal and State.</i> Rowe, Jones.	2	2	2	631.
634	<i>City Government and City Problems.</i> Rowe, Giesecke.	2	2	2	631.
635	<i>Labor Legislation . . .</i> Young.	2	2	2	631.
636A	<i>Election Systems . . .</i> Giesecke.	2	—	1	631.
636B	<i>Political Parties . . .</i> Giesecke.	—	2	1	631.
637	<i>Colonies and Dependencies.</i> Young.	2	2	2	631.
638	<i>International Law..</i> Rowe, Jones.	2	2	2	631.
639	<i>Foreign Policy of the United States.</i> Jones.	2	2	2	631.
641	<i>The Police Power..</i> Pierson.	2	2	2	631. Omitted in 1908-09.
642	<i>Blackstone's Commentaries.</i> Barnes.	2	2	2	For Juniors and Seniors.
651	<i>Government Regulation of Commerce and Industry.</i> Pierson.	2	2	2	631.
653	<i>Comparative Federal Governments.</i>	2	2	2	631. Omitted in 1908-09.
654	<i>Preliminary Bar Examination.</i> Barrett.	4	4		Not credited towards a degree.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
656	<i>Constitutional Government and Constitutional Guarantees in Latin America.</i> Rowe.	2	2	2	631.
657	<i>European Colonial Systems.</i> Jones.	2	2	2	Open to Juniors, Seniors, and Graduates.
658	<i>Railway Law.</i> ..... Pierson.	2	2	2	Open to Juniors and Seniors.
659	<i>Readings in Political Science.</i> Jones.	2	2	2	Open to Juniors, Seniors, and Graduates.

## SOCIOLOGY.

No.	Subjects.	Hours a week.		Units of Work.	Preparation required, remarks, etc.
		1st Term.	2d Term.		
190	<i>Standards of Living.</i> Mussey.	2	2	2	Open to Juniors and Seniors. Omitted in 1908-09.
191	<i>Social Economy</i> ... Mussey.	2	2	2	
192	<i>Social Reformers</i> ... Mussey.	2	2	2	191.
193	<i>Charities</i> ..... Kelsey.	2	2	2	191.
194	<i>Sociology</i> ..... Kelsey.	2	2	2	191, 192 or 193.
195	<i>American Social Problems.</i> Kelsey.	2	2	2	191.
196	<i>Criminology</i> ..... Kelsey.	2	2	2	191. Omitted in 1908-09.
197	<i>Social and Vital Statistics.</i>	2	2	2	191. Omitted in 1908-09.
198	<i>Sociological Field Work.</i> Kelsey.	2	2	1	191. Omitted in 1908-09.

## DESCRIPTION.

161. *Political Economy*.—An introduction to the study of economic questions. The course is designed to give the students an elementary knowledge of modern economic theories and practical problems. In addition to the text book, special reports, class assignments and readings in books on current questions are required of all students. Nearing and Watson's *Economics*.
162. *Advanced Economics*.—Designed primarily as an introduction to social philosophy. Mill's *Political Economy*. Each of the leading doctrines is traced through the various phases of its development until it assumes its final form in the writings of Mill.
163. *English Civilization*.—Social progress of England during the last three centuries. Facts in regard to each great industrial epoch are presented, and their influence on national life, thought and activity considered.
164. *Economic Progress in the Nineteenth Century*.—In this course the economic problems which are peculiar to the Nineteenth Century are taken up and traced from their origins to the end of the Nineteenth Century, with a view to showing their character and probable developments.
165. *Tariff and International Trade*.—A series of lectures and class reports covering the following: 1. The development of tariff legislation in the United States and Europe; 2. The development and future drift of international trade relations; 3. The various phases of "The Trust Problem," especially in its relation to the tariff and international trade.
166. *The Rise of Modern Industry*.—A study of English and American economic and social history, tracing the development of modern industry from the medieval guild system through the domestic and factory systems to that of modern large scale production. The development of the present industrial classes will receive attention along with the development of economic resources.
167. *Economic Problems*.—A study of first hand material covering the more important current economic problems. Work will consist of field trips, class reports, assigned readings and the reading of current literature.
171. *Earth and Man*.—The development of the fundamental

physical factors necessary for man's industrial and social progress. The general agents of erosion, and the resulting earth forms, the character and formation of soils and useful minerals. The atmosphere, its circulation, the development of storms, the distribution of rainfall and of plant and animal life. The ocean, its currents, etc.

172. *Political Geography*.—A study of the geographic forces that have influenced the formation and development of the leading nations of the world. An examination of the geographic facts connected with recent and present international questions. The course is so conducted as to require the student to acquaint himself with the main facts of the geography of each country studied. Mill's *International Geography* and Longmans' *School Atlas*.

173. *Climate and Civilization*.—The course will treat of the influences of different climatic conditions on human relations such as distribution of population, occupations, products, trade and commerce, travel and transportation, customs and habits, dress, history, diseases, and the question of acclimatization.

175. *Economic Conditions in South America*.—A study in the wealth of nations. The facts of production and trade in this unappreciated continent, and careful study of the resources and underlying industrial and commercial factors.

181. *Commercial Geography of the United States*.—A study of the United States as a place in which men live and make a living. Resources and industrial conditions in the different sections of the country, and the foreign trade to which the industries give rise. Basis of our foreign trade shown by examination of foreign countries.

182. *The Business of American Commerce*.—Part I: Commercial markets for (1) manufactures and minerals, (2) farm products. 1. The markets for textiles, iron and steel, coffee, coal, leather, rubber goods, lumber, petroleum and other staples. 2. The collection, storage and marketing of farm products (grain, cotton, tobacco, livestock, wool, etc.). Country elevator and warehouse systems; organization and location of primary markets; inspection and grading; organization of leading produce exchanges, boards of trade and chambers of commerce; use of government and private reports; the insurance

of commodities, financing of crops movements and loaning on produce. 3. Transportation facilities and costs as applied to leading manufactures, minerals and farm products. Pipe lines, private car lines; refrigeration service; shipping papers; leading rail and water routes; port rivalries. 4. Location and development of leading domestic markets; market competition. 5. The trade situation in leading foreign markets. Part II: Government Aid to Commerce; the work of the departments, river and harbor improvement, aid to the merchant marine; effects of tariff on trade; commercial treaties.

183. *Stock and Produce Exchanges*.—The evolution of stock and produce exchanges; the benefits growing out of such exchanges; the terminology used in the stock and produce market; stock and produce speculation; investment brokerage; the internal organization of an exchange; the tools and methods employed in the conduct of business on exchanges; the purpose and extent of dealing in "futures"; the warehouse and elevator systems and systems of inspecting and classifying commodities; the listing of securities; the clearing house system; the broker and his work; the law affecting brokers and their customers; and the influence of the money market.
184. *Transportation*.—A study of the American railway system, the several branches of the railroad service, and the questions of public aid and public control. The last third of the year is devoted to street railway and highway transportation. Johnson's *American Railway Transportation*.
185. *Railway Rates and Traffic*.—A study of the traffic service of railways—steam and electric. The first semester is devoted to the freight service, the second half year to the passenger, mail, and express services. Students are provided with a topical outline of the course, which is given partly by lecture and partly as a seminary course.
186. *Organization of International Commerce*.—A study of international trade and transportation. The organization of the ocean-carrying trade; line traffic, charter traffic, ocean trade routes and coaling stations. Leading continental routes of international trade. The theory and development of trade centers, and an examination of

those of the present. The commercial activities within the trade center. International payments and the balance of trade.

187. *Ocean Transportation*.—A study of the ocean transportation system and service, of the relations of ocean carriers with each other and the public, and of government aid and regulation of ocean commerce and transportation. The course also includes canal, river and lake transportation. Johnson's *Ocean and Inland Water Transportation*.

188. *Brokerage*.—The course consists of lectures and research work in the Brokerage of Bonds, Notes, Stocks, Money, Foreign Exchange, Cereals, Cotton and Metals. The student is permitted to carry on special research work along that particular line of the brokerage business which he intends to pursue or in which he is most interested. The present course being of an advanced character students must first take course 183, Stock and Produce Exchanges, or must have had practical experience in the brokerage business of a nature satisfactory to the instructor in charge.

189. *History of American Commerce*.—Tu. Th. 4, 2 hours a week, second term. A course describing the origin and development of commerce and commercial institutions. The geographic, economic and social causes of commercial changes and trade progress are explained; emphasis is laid upon the relation of commerce to other economic activities and upon the connection between trade and social and political ideas. Among the subjects discussed are the foreign, coastwise and domestic trade of the United States, the commercial policy of the Federal Government and the States, American fisheries and the fisheries question, the consular service of the United States, and the history of the organization of commerce. Instruction is by lectures accompanied by required readings.

190. *Standards of Living*.—An examination of existing conditions and costs of living, especially among workingmen. The relation of the standards of living to wages and industrial efficiency. The various methods of self help and State help for maintaining and raising the standard of living such as trade unions, co-operation, workingmen's insurance, and industrial education.

191. *Social Economy*.—Relations of physical and social environment to beliefs, social standards and social ideals of different races. Patten's *Development of English Thought*; Ripley's *Races of Europe*; Brinton's *Races and Peoples*. Lectures, syllabus and discussion of written reports.

192. *Social Reformers*.—A study of the writings of four groups of social reformers: (a) the Utopists: Saint-Simon, Fourier, Owen, Bellamy and Hertzka; (b) the Moral and Ethical group: Kingsley, Maurice, Carlyle, Ruskin, William Morris and Henry George; (c) the Proletarian-Socialistic group: Blanc, Proudhon, Lassalle, Schultz-Delitsch, Marx, Engels, Bebel and Liebknecht; (d) the Government Meliorists: Shaftesbury, Nicholls, the Fabians and others.

193. *Charities and Correction*.—A study of social failures, and of the efforts to restore social-debtor classes and individuals to social efficiency. The causes of poverty: the problems of pauperism: the development and administration of charities and forward social movements; public and private agencies in dealing with pauperism, with particular reference to existing American agencies for dealing with the various classes studied. Lectures, assigned readings, reports.

194. *Sociology*.—A review of the newer biology and its effects upon our ideas of physical heredity. The physical and social environment of man. Social development as affected by nature. The institutions of the Indians and the early Teutons. The theories about society from Aristotle to the present day. A study of present social institutions. Lectures, assigned readings, reports.

195. *American Social Problems*.—A study of the Negro, Indian, Chinese and other race problems. Immigration and race adjustment. Marriage and divorce, labor problems, etc. Lectures, assigned readings and reports.

196. *Criminology*.—A study of the criminal and the causes of crime. An historical survey of the treatment of the criminal and a constructive criticism of existing legal and penal machinery. Lectures and assigned readings, reports.

197. *Social and Vital Statistics*.—The object of this course is to prepare the student to collect, arrange, and make practical use of the most important material in the fields of economic and sociological research. Special emphasis

is laid upon the interpretation of statistical data. The course is open to Seniors and Graduate students.

198. *Sociological Field Work*.—A study of actual social conditions and of methods employed in the care of dependent and delinquent classes. The course consists largely of trips to various institutions for social betterment in and near the city, supplemented by class work and reports. Students are advised to take 193 and 196 as a preparation.

201. *Accounting*.—Theoretical and practical bookkeeping. Lectures and bookkeeping practice, illustrated by the various forms of business papers and instruments in current use. Special work in business mathematics, including the use of logarithms in the calculation of investment returns, is also made a portion of this course.

202. *American Industry*.—Lectures, readings and occasional visits to industrial plants in Philadelphia. The sources of power and its application in industry. This is followed by a description of the leading industries in the United States. Especial attention is given to the sources and supply of raw material and to factors affecting the location of industry.

203. *Industrial Management*.—A study of manufacturing organization. Analysis of chief influences and present tendencies in the location of industrial establishments. Methods of business organization and management, manufacturing methods and factors affecting the cost of production.

204. *Field Work in Industry*.—A study of actual conditions in industry by an inspection of shop and factory on the premises, special attention being paid to arrangement of plant, transportation facilities, the handling of raw material, and the organization both of accounting and of manufacture. A complete report on each plant visited and a final paper describing a model plant.

205. *Business Law*.—The study of the elementary principles of the law relating to the more common business transactions, including contracts, sales, promissory notes and bills of exchange, contracts of common carriers and agency.

205 A. *Advanced Business Law*.—The second year of Business Law is devoted to a study of the form of partnership articles; the liability of partners; corporations and the general rights and liabilities of stockholders, directors

and officers; bailments and sales of personal property, respective rights of seller and buyer; estates of dece-  
dents, appointment of executors and administrators.

206. *Advanced Accounting and Auditing*.—The principles of higher accounting, including the use of columnar books, revenue accounts, with the treatment of depreciation, bad and doubtful debts, etc. The accounts in insolvency are discussed together with the process employed in liquidating a business concern. In the second term the subject of cost-keeping is discussed in all its phases, followed by a thorough exposition of the principles of auditing.

207. *Practical Accounting Systems*.—Description and explanation of the accounting systems employed by the various types of business, including department stores, railroads, street railways, municipalities, mining, gas and electric lighting, and insurance companies, building loan associations and the accounts of executors and administrators. Lectures supplemented by C. P. A. problems given by the various States.

208. *C. P. A. Course*.—This course is a special quiz course for those students who have taken courses 201, 206 and 207, and covers in review the whole field of accounting with special emphasis on the requirements for the C. P. A. examination. Lectures, supplemented by student reports on assigned subjects.

210. *Life Insurance*.—The history and financial development of life insurance; description of various types of policies and the calculation of the premium for each. A study of the surplus, reinsurance reserve and surrender values. A study of the different systems of life insurance, "old line," assessment, fraternal and industrial. Policy provisions and the policy contract. The law of life insurance. The investment of insurance funds. A study of the organization of the office, the work of the several departments, and the practice of the business. Relations of the business to the State as shown by an analysis of State statutes. The course will also include a study of (a) Accident and Health Insurance, and (b) Employer's Liability Insurance. Lectures, special reports and assigned readings. Instruction is reinforced by lectures delivered throughout the year by men prominent in the insurance business.

211. *Fire, Marine and Fidelity Insurance.* (Two units, two terms.)—A consideration of (a) the historical development; (b) the process of rate-making; (c) the policy contract; (d) various types of policies; (e) State statutes on policies; (f) the organization and management of the insurance system, and the practice of the business. In the study of fire insurance the course also deals with the subject of fire prevention. Lectures, special reports, assigned readings, and discussions by prominent insurance officials.

212. *The Law and Practice of Insurance.*—An advanced course designed for those who have taken courses 210 and 211. In this course an opportunity is given for special investigation in those branches of insurance which members of the class may wish to choose as a profession. The work will consist mainly of reports and assigned readings.

213. *Insurance.*—A general course dealing with the principal legal and business phases of fire, life, marine, employers' liability, and corporate surety insurance. The course is designed for those who wish to know only the chief elements of insurance for the practical assistance which such knowledge would give in connection with other business pursuits. Lectures, class reports and assigned readings.

214. *Investments.*—The nature, methods and laws of investment, and of the relation of speculation to investment. The relative merit of railway stocks, bonds, farm mortgages, street railways, gas and water securities, municipal and county bonds, etc., as investments. Lectures, assignments and class discussion. No. 219 is a prerequisite.

216. *Banking.*—A study of the theory and practice of banking, including a thorough drill in the Law of Negotiable Investments. (a) The National Bank. Organization; departments and duties of officers. Operations. Loans, discounts, deposits, commercial credit; collections; cheques and clearing machinery; circulation. Accounting system and records. Examinations, statements and reports. Bank failures. (b) State and Private Banks. (c) Foreign exchange and international banking. (d) Banking systems—American and European.

217. *Money, Credit and Foreign Exchange.*—The history and uses of money; the nature of credit, and the development of

credit uses. The phenomena of the money market in their relation to trade, industry and speculation. The machinery of the domestic and foreign exchanges. Goschen's *Foreign Exchange*; Jevons' *Money and the Mechanism of Exchange*; McLeod's *Theory of Credit*; Clare's *A B C of Foreign Exchange*.

218. *Public Finance*.—A review of the most important events in the financial history of the United States. The development of the financial methods of this government separately, and comparatively with those of other countries. An investigation of the Customs and Internal Revenue systems. The principles and forms of taxation. The study of selected cases on National, State, and Municipal taxes. Dewey's *Financial History of the United States*; Plehn, *Public Finance*.

219. *Corporation Finance*.—A study of the financial methods peculiar to the railroad and industrial corporation, and of the special advantages of the several financial methods that may properly be employed. A study of the financial operations in promotion, construction, operation and consolidation of manufacturing and railroad enterprises. Special attention is given to the methods employed in the financing of trusts. Lectures, assignments and class discussion. Dill's *New Jersey Corporations*; Meade's *Trust Finance*; Greene's *Corporation Finance*.

221. *Marketing of Products*.—The methods now practiced in the organization and conduct of the sales departments of manufacturing, wholesaling, department store, retailing and mail order businesses. The principal subjects of study in this course are the internal organization, methods of selling, forms and correspondence; the principles of advertising and the value of various classes of publications as mediums for publicity. Lectures and assigned investigations.

225. *Real Estate*.—A course dealing with the legal and business problems connected with the sale, purchase and management of real property. After completing a study of the law and practice relating to titles, mortgages and ground rents, the remainder of the course is devoted to the consideration of particular classes of real estate. The valuation, management and location of office buildings and business properties, the development of suburban real

estate, the work of the operative builder and the functions of building and loan associations are considered.

226. *Private Finance*.—A course dealing with the financial organization and management of business enterprises. The various plans of business organization and the methods of providing capital under each class of organization are considered. The financial administration of a business is next studied. The duties of the financial department; the organization of the credit department; the principles governing the extension of mercantile credit and the relations between the business house and the banks are investigated. The financial management of the purchase and sales departments is considered; and the methods of reorganization or the amicable liquidation of bankrupt enterprises are studied.

631. *Constitutional Law*. A study of the practical operation and theory of the Federal Constitution. Recent changes and present tendencies. Foreign governments compared with the American system. Growth of the federal form. Lectures and required readings.

632. *Citizenship: Federal and State*.—The acquisition and loss of citizenship. Protection to the rights of citizenship. The distinction between State and Federal citizenship. Protection to foreigners residing in the United States. Status of inhabitants of newly acquired territory, with special reference to Alaska, Hawaii, Porto Rico and the Philippines.

634. *City Government and City Problems*.—A comparative study of city government in Europe and the United States.

Part I. The problems of city life in ancient and medieval times. Changes in political and social conditions accompanying the rise of the modern city. The political and social consequences of city growth.

Part II. The form of municipal government in the United States as compared with England, France and Germany. The relation of the municipality to quasi-public works, such as street railways, gas and water supply. The social activities of the municipality. Shaw's *Municipal Government in Great Britain*; Goodnow's *City Government in the United States, Municipal Problems, and Municipal Home Rule*.

635. *Labor Legislation*.—A study of the field of labor organization and labor disputes with special reference to the practical

and legal questions arising therefrom. The method of forming an employers' association to handle labor questions, the purposes and the results of these associations, the methods used in preventing and breaking a strike, the formation of trade agreements, the means of enforcing them and the extent to which such agreements are feasible are examined in detail. The internal organization, leadership and practical operation of a labor union. How strikes and boycotts are planned and conducted. The Federal and State laws and court decisions governing these problems are examined, together with the factory and sweatshop laws and the statutes and decisions on employers' liability.

636 A. *Election Methods and Systems*.—Methods of representation, including the proportional system; the ballot, national, State and local conventions; the nominating primary; the primary versus the convention. Direct legislation, the initiative and the referendum. First term.

636 B. *Political Parties and Party Government*.—The place of political parties in our system, their history, organization and work. Second term.

637. *The American Dependencies*.—A study of the new dependencies of the United States and of their economic and political problems. Porto Rico, Cuba, the Canal Zone, the Philippines and Hawaii, are studied with special reference to such questions as the representative system, suffrage, education, the colonial service, religious and racial differences. The development of the peoples and of the natural resources of the islands, and the attitude of the population towards the United States.

638. *International Law*.—Nature and source of international law. The evolution of the rules of international law. Contributions of the United States to the development of international law. The law of peace with special reference to the rights and obligations connected with independence, jurisdiction and equality. The growth of the "European Concert" and of the primacy of the United States in American affairs. The law of neutrality with special reference to the duties of belligerent towards neutral states and of neutral states towards belligerent states. Discussion of blockade, contraband and unneu-

tral service. The law of war with special reference to enemy, person and property on land and at sea. Lawrence's *Principles of International Law*; Scott's *Cases on International Law*.

639. *Foreign Policy of the United States*.—A study of the treaty-making power in its relation to the legislative power of Congress and to State legislation. Brief résumé of the history of foreign relations, followed by consideration of international questions in which the United States is interested, especially those concerning the Far East. Foster's *Century of American Diplomacy* and *American Diplomacy in the Orient*; Henderson's *American Diplomacy*.

641. *The Police Power*.—Lectures, cases and text-book. Freund's *Police Power* is used as a guide. A study of the common law and constitutional principles regarding the execution and enforcement of police legislation. Special emphasis is put upon State control of social and economic interests, particularly those restraints and regulations which promote the general welfare.

642. *Blackstone's Commentaries*.—Open to Seniors and Juniors in the Wharton School.

651. *Government Regulation of Commerce and Industry*.—Discussion of the relation between Federal and State regulation. Power of Federal Government under interstate and foreign commerce clause; interstate commerce act, anti-trust law, contracts in restraint of trade; regulation through the power of taxation. State corporation laws, legislation with reference to industrial and commercial combinations and consolidations.

653. *Comparative Governments*.—A comparative study of the governments of the United States, England, Germany, France, Switzerland, giving special emphasis to the present tendencies in the making of constitutions, the working of the party system, and the powers of the legislative, executive and judiciary. (Omitted in 1908-09.)

654. *Preliminary Bar Examination*.—This course includes a review of the subjects required by the State Board of Law Examiners in the preliminary examination, which must be taken three years before final admission to the bar. It is advisable to take this course and to pass

the preliminary examination before entering the Law School.

655. *Secretarial Work*.—A series of studies, designed to prepare students for secretarial positions, particularly in corporation work. The student is given stenographic exercises and special attention is devoted to corporation practice and business methods. This course counts one and one-half units of credit.

656. *Constitutional Government and Constitutional Guarantees in the Republics of Latin-America*.—Second term, 2 hours. Part I: The study of the influence of the constitution of the United States on the political organizations of the republics of Latin-America. Contrast between the actual operation of similar constitutional provisions in the United States and the republics of Latin-America. Gradual adaptation of constitutional forms to local needs.

Part II: Constitutional protection to personal and property rights. The suspension of constitutional guarantees. Analysis of the causes of increasing stability. Influence of social changes on constitutional organization.

657. *European Colonial Systems*.—A study of the principal European colonial systems and their forms of government. The methods and degree of home control; tariff legislation and colonial trade. Special emphasis on the methods of colonial administration affecting finance, commerce, agricultural conditions and the labor market. Lectures and assigned readings.

658. *Railway Law*.—A discussion of the legal relation of railways to the public, to each other, and to the shipper. Particular attention will be given to the recent State and Congressional legislation and the judicial interpretation thereof. The Interstate Commerce Act, The Elkins Act, The Safety Appliance Act, The Hepburn Rate Law, The Employers' Liability Act, and the Two Cent Rate Acts are given special attention.

659. *Readings in Political Science*.—Lectures, reports and discussions on the literature of the subject. First semester: The development of political philosophy from the Greeks to the present. Second semester: A review of the chief works in the various fields of present day political writing. (Offered in 1909-10.)

## EVENING SCHOOL OF ACCOUNTS AND FINANCE.

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The Evening School of Accounts and Finance was established in 1904, for the purpose of offering advanced instruction in financial and commercial subjects to men who are prepared to pursue University work, but who are prevented by their employment from attending the day classes in the Wharton School and also for the preparation of students in Accountancy for the State Examination for the degree of Certified Public Accountant. The regular course covers a period of three years, and upon the satisfactory completion of twenty-four units of work, a certificate of proficiency is awarded.

Instruction is given by the following officers of instruction of the University:

**Professor E. S. MEADE**, *Director of the Evening School; Money and Credit, Investments.*

**Professor S. N. PATTEN**, *Political Economy.*

**Assistant Professor THOMAS CONWAY, JR.**, *Secretary of the Evening School; Real Estate, Corporation Finance.*

**Assistant Professor S. HUEBNER**, *Insurance, and Markets and Prices.*

**Assistant Professor WARD W. PIERSON**, *Commercial Law.*

**H. EDGAR BARNES, LL. B.**, *Commercial Law.*

**Dr. THOMAS WARNER MITCHELL**, *Accounting.*

**JOHN J. SULLIVAN, LL. B.**, *Commercial Law.*

**EDWARD P. MOXBY, JR., C. P. A.**, *Accounting.*

**WALTER K. HARDT**, *Accounting.*

**SCOTT NEARING**, *Political Economy.*

### SUBJECTS OF INSTRUCTION.

FIRST YEAR.	Hours per week.
1. Accounting, I.....	2
2. Money and Credit.....	2
3. Commercial Law, I.....	2
4. Markets and Prices.....	2

**ACCOUNTING, I.****Mr. MOXBY, Mr. HARDT and Dr. MITCHELL.**

The course in Accounting assumes that the student is already familiar with the principles of ordinary Double Entry Bookkeeping. It consists of lectures on the principles involved in the handling of Revenue Accounts, the Accounts in Insolvency, Realization and Liquidation; the treatment of Depreciation and the handling of Bad and Doubtful Debts. These lectures are supplemented by problems in which the principles of Accounting are applied to specific cases. Corporation Stock Books are described and explained, and the necessary opening entries for the books of a Corporation are illustrated. During the latter part of the year the student is made familiar with Business Mathematics as applied to the calculation of Investment Returns and Bond Values.

**MONEY AND CREDIT.**

This course lays the ground-work for a more advanced study in Finance and Banking. After describing the nature of money in its relation to credit, the nature of the demand for money, the considerations affecting its supply, and the factors which influence the rate of interest, the students are made familiar with the forces operating upon prices. Special attention is given to the nature of bank credit, the factors determining its amount, and its influence upon the prices of commodities and securities.

**COMMERCIAL LAW, I.**

This course is intended to give a thorough grounding in the principles of law governing business transactions and to give facility in the application of these principles. Most of the first year's work is devoted to contracts and negotiable instruments. Under contracts, are considered form and consideration, negotiation, capacity of parties, and the payment necessary to make a contract binding. Negotiable instruments are discussed under the following heads: construction, form, capacity of parties to the instrument, and the liabilities of indorsers. The concluding lectures will be devoted to a study of the law of agency.

**MARKETS AND PRICES.**

This course deals with the marketing of grain, cotton, meat, iron, coal, oil, lumber and securities. It involves a discussion of the location and importance of each industry; the routes of travel, the

location of the chief distributing and consuming centers; transportation rates; the process of handling the commodity while transported; the warehouse, elevator and warrant system; the system of inspecting, grading and classifying the leading staples; market reports; news agencies; government and financial reports; the organization of stock and produce exchanges; the various kinds of transactions on such exchanges and the methods of delivery; the fixing and dissemination of quotations; the explanation of dealing in "futures;" hedging, privileges and arbitrage.

#### SECOND AND THIRD YEARS.

The second and third years' work is embraced in the following courses:

	Hours per week.
5. Corporation Finance.....	2
6. Commercial Law, II.....	2
7. Commercial Law, III.....	2
8. Real Estate.....	2
9. Insurance and Brokerage.....	2
10. Banking.....	2
11. Political and Economic Problems.....	2
12. Accounting, II.....	2
13. Accounting, III.....	2
14. Industrial Chemistry.....	2
15. Investments .....	2

In the second and third years, the student is allowed considerable latitude in selecting his course, being enabled to take those subjects which, because of his business or personal inclinations, particularly appeal to him. During the second year, every regular student is required to take the courses in Corporation Finance and Commercial Law, II, and in addition to select two other courses from the preceding group. The third year required course is Commercial Law, III.

For the students in Accountancy, however, the studies required in the second and third years are as follows: During the second year, Accounting students are required to pursue the courses in Corporation Finance, Brokerage and Insurance, Accounting, II, and Commercial Law, II. In the third year, the requirements for Accounting students are: Accounting, III, Real Estate, Commercial Law, III, and Investments.

**CORPORATION FINANCE.**

A study of the financial organization and conduct of corporations, especially railroads and industrials. The first lectures are devoted to a study of the methods usually followed in the promotion and flotation of a company and the procedure to be followed in the organization of a corporation. The formation and operations of the underwriting syndicate, the methods of securing capital, the management of sinking funds, the determination of profits, the proper division of profits between surplus and dividends, the various methods of consolidation, and the causes of bankruptcy are considered. The provisions of corporate leases and mortgages, the legal position of the mortgage trustee and the practice in receiverships and reorganizations are also discussed.

**COMMERCIAL LAW. II.**

A continuation of the first year's course, taking up the law of sales; partnerships of the ordinary kind, as well as special partnerships under the statute of 1836; partnership associations under the statutes of June 2, 1874, and May 9, 1899; decedents' estates and the powers and duties of executors, administrators and trustees; wills and the distribution of the property of those who die without making a will.

**COMMERCIAL LAW. III.**

A continuation of the second year's course, taking up the law of corporations; the powers and liabilities of officers and directors; the legal rights of holders of stocks and bonds, as well as of members of corporations not organized for profit; the methods of corporation government; the doing of business in Pennsylvania by corporations organized elsewhere, and the formation and dissolution of corporations. Attention is also given to the rules of evidence, explaining on what party to a lawsuit the burden of proof rests; what kind of evidence is admissible; what witnesses may testify. The law of crimes against property, such as larceny, embezzlement, forgery and fraud is also considered. The year concludes with a study of the law of suretyship and guaranty, showing how such contracts have to be made, and the rights and liabilities of the various parties affected by them.

**REAL ESTATE.**

A course dealing with the legal and business problems connected with the sale, purchase, and management of real property. The

various methods of acquiring title; the essential portions and the most commonly used covenants of deeds; the legal principles of the law of mortgages; the legal position of the mortgagor; the rights and privileges of the mortgagee; the distinction between a mortgage and a conditional sale; the principles of the law of landlord and tenant; the liabilities of the lessee to the landlord, and the liabilities of sub-tenants are studied in detail. The student is given practice in applying these principles by work in drawing the simpler kinds of deeds, mortgages and leases. The valuation, management and proper location of office buildings and business properties; the development of suburban real estate, and the work of the operative builder are also considered.

#### INSURANCE AND BROKERAGE.

The first term work is devoted to a study of the leading principles of insurance. The brokerage business is treated in the second term. This is a continuous course, the student registering for the entire course.

*Insurance.*—A study of the leading principles of Life Insurance, Fire Insurance, Corporate Suretyship and Liability Insurance. Special attention will be given to the advantages and disadvantages of the various types of policies; the manner of ascertaining the premium; the insurance reserve for different companies; the surplus; policy loans; the payment of the premium; the rights of the beneficiary; the investment of the company's funds and the leading principles of the law of insurance.

*Brokerage.*—A study of the methods of transacting business on the leading stock and produce exchanges of the country. The course includes a study of the terminology used in the security and produce markets; investment brokerage; arbitrage; bond brokerage; calculation of bond values; "rights," forms of settlement and delivery; the Clearing House system; the methods of accounting used in brokerage offices; the legal status of exchanges, and the chief legal relations existing between broker and client, with special emphasis upon the duties and liabilities of broker and customer.

#### BANKING.

This course deals with the organization and management of banks and trust companies. The considerations affecting the extension of credit; the process of discounting and collection; the problems arising out of the management of deposits and reserves; and the different methods of clearings and collections are explained. The

course includes a thorough study of banking law and of the leading court decisions. The methods of the principal foreign banks are also discussed, and a thorough study is made of the subject of foreign exchange.

#### POLITICAL AND ECONOMIC PROBLEMS.

This course considers the laws which regulate the production, distribution and consumption of wealth. Lectures and readings will be supplemented by papers and reports dealing with monetary problems, the tariff, capital and labor, immigration, women in industry, child labor and the problems of city life. During the year each student will prepare two papers based on library work, and two reports of investigations covering some assigned problem. Special topics discussed are the rent of land, the effect of standards of living upon the rate of wages, the problems of socialism and the single tax, the problem of immigration, the tariff question, and the attitude of the state toward capital and labor. The purpose of this course is to bring clearly before the student the leading economic problems of the day, with a view to enabling him to participate intelligently, as a citizen, in their solution.

#### ACCOUNTING, II.

A continuation of Accounting, I, consisting of lectures on Accounting principles, as applied to various types of business organization supplemented by practical problems to be worked out by the student. The course includes a study of the Accounts of Building Associations, Banks, Insurance Companies and other financial institutions, Gas and Electric Lighting Companies and Street Railways. The student is also made familiar with the Accounts of Trustees and Executors. The Accounts of Railroads, Selling Institutions and of Municipalities are finally considered and explained.

#### ACCOUNTING, III.

This course is divided into two parts. The First Term consists of lectures and practical work on the subject of Cost Keeping. The proper handling of materials and the various accounting methods employed in this work are treated. The proper methods of taking an inventory, the various plans for ascertaining Labor Costs, and the systems most commonly used for the calculation and distribution of the indirect expenses of a factory are considered.

The Second Term is devoted to a study of Auditing. The principles of this subject are explained in lectures, the student supple-

menting the work by solving questions from the various State Board examinations, and from the experience of leading accountants. The work of the Instructor is supplemented by lectures from specialists in Manufacturing Accounting and Auditing.

#### INDUSTRIAL CHEMISTRY.

This course considers the elementary forms of matter, their compounds, the fundamental principles of their combination, and the uses to which the elements and their combinations have been put in applied chemistry. The leading applications of chemistry in the iron and steel, leather, glass and other important branches of production will be considered. The method of study is by lectures, supplemented by class-room demonstrations.

#### INVESTMENTS.

This course aims to qualify the student for that critical analysis of a security which is necessary to a conservative estimate of its value. The nature and value of government bonds; the factors determining the desirability of municipal bonds and the conditions affecting their legality will be treated. The investment position of railroad stocks and bonds will be determined, an examination being made of the influences of fluctuations in earnings upon the value of these securities. The securities issued by street railways, gas and electric lighting, telephone and telegraph, shipping and mining companies will be next considered. Attention will finally be given to the movements of stock and bond prices during the last fifteen years to familiarize the student with the various influences which act upon security values.

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#### ADMISSION

Applicants for admission must be at least eighteen years of age. If over eighteen years, but less than twenty-one years, they must have pursued a preparatory course equivalent to three years in a High School or a Preparatory School. For candidates over twenty-one years of age, who have not pursued such a preparatory course of study, an amount of business experience sufficient to familiarize them with the ordinary forms, accounts and methods of business will be required. Each application will be given separate consideration.

**TUITION.**

All tuition fees are payable in two installments. The tuition charges for the regular course for the first year will be \$50; while for the second and third years, the fees will be \$65 each. The tuition fees for a single course will be \$20; for two courses, \$35; and for three courses, \$50. All other expenses, as for example books and syllabi of lectures, are \$2.50 per course. A deposit of \$2.50, which is returned at the end of the year (unless the student has destroyed University property or incurred charges which remain unpaid) is required of all regular students.

**METHOD.**

The courses are conducted by means of lectures, individual reports, required reading and examinations. Emphasis will be laid upon original work by the students under the guidance of the instructor. The aim of the course will be to develop reasoning power and facility of thought, as well as to impart knowledge. The right is reserved to withdraw any elective course, at the beginning of the year, in case the registration for such course does not warrant its being given.

**LECTURES.**

An important feature of the work of the Evening School consists of lectures delivered on stated topics by business men. Such lectures are a valuable supplement to the ordinary instruction, because they keep before the student the points of view and the methods of active and successful men of affairs.

**CERTIFICATES.**

On the satisfactory completion of twenty-four units of work, a certificate of proficiency is granted.

**CERTIFIED ACCOUNTANTS.**

Copies of the rules which have been established, by the State Board of Examiners, for the preliminary study necessary to qualify the applicant for the examination for the certificate of a Certified Public Accountant, will be furnished upon request.

**SESSIONS.**

The sessions of the School opened on September 25th and will close on May 27th. There will be two weeks intermission during the Christmas holidays and a week's vacation at Easter. The hours will be from 8 to 10 P. M. daily, Monday to Thursday inclusive.

**REGISTRATION.**

Candidates for admission to the Evening School of Accounts and Finance are required to submit a statement of their education and business experience. The office of the School in Logan Hall will be open for registration every evening (except Saturday) from seven-thirty to nine, and on Saturday afternoons from two to four.

Address all communications to Dr. Thomas Conway, Jr., Secretary, Logan Hall, Thirty-sixth Street and Woodland Avenue, University of Pennsylvania, Philadelphia.

## OFFICERS OF ADMINISTRATION AND INSTRUCTION IN THE COLLEGE COURSES FOR TEACHERS.

CHARLES C. HARRISON, LL.D., PROVOST.

EDGAR F. SMITH, PH.D., SC.D., LL.D., VICE-PROVOST, and Professor of Chemistry.

JOSIAH HARMAR PENNIMAN, PH.D., LL.D., Professor of English Literature, and DEAN OF THE COLLEGE.

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### COLLEGE COURSES FOR TEACHERS.

In the year 1892 the University of Pennsylvania offered certain special courses intended primarily for teachers, open to men and women alike. These courses were subsequently enlarged and varied from year to year, and many teachers and other persons in Philadelphia and vicinity have availed themselves of them, several hundred each year completing the courses in one or more of the score of subjects offered; and this notwithstanding the fact that no credit towards a degree has hitherto been given for any of this work. The repute and success of these courses impelled the College Faculty to a consideration of the advisability of further extending the advantages of University training to the many teachers and others whose daily avocations make it impossible for them to attend lectures and recitations at the usual college hours. As a result a preliminary announcement was made in February, 1906, setting forth an extension of the work offered to teachers in the shape of "additional courses similar in character to the corresponding courses now given regularly in the School of Arts;" and further providing that, under suitable regulations, work in these courses should count as credits towards the baccalaureate degrees.

### ADMISSION AND DEGREES.

The requirements for admission to the College Courses for Teachers and the degrees conferred are the same as for the Course in Arts and Science. The requirements for admission are explained below.

The courses are open to both men and women.

The degree of *Bachelor of Arts (A.B.)* is conferred on graduation

upon students who have presented Latin and Greek for admission and who have completed in College three units of Latin and three units of Greek.

The degree of *Bachelor of Science (B.S.)* is conferred on graduation upon students who have completed the required language work in two of the following languages, Latin, French and German.

#### ADMISSION REQUIREMENTS.

Candidates for admission to the College Courses for Teachers enter either (1) by examination; (2) upon diplomas of public normal or public high schools; or (3) on suitable evidence of work done at other colleges. In each of the two latter cases the credentials of the candidate must be approved by the Committee on Schools and Entrance Requirements or by the Committee on Advanced Standing. Where a question as to the preparation of a student arises the applicant may be accepted on probation to be terminated on the satisfactory completion of the work undertaken.

#### EXPENSES AND SESSION.

Inasmuch as students in the College Courses for Teachers will not be required to complete in any year a fixed minimum number of courses, the charge for tuition will be by the unit at the same rate as for the course in Arts and Science, viz.:

TEN DOLLARS per year (or FIVE DOLLARS per term) for each hour per week. Two hours of laboratory work will be charged as one hour of lecture or recitation.

DEPOSITS REQUIRED: A deposit of \$10.00, to cover cost of materials and possible damage to apparatus, etc., is required of all students taking laboratory courses in Botany, Chemistry, Physics, Psychology and Zoology.

Fees are payable at the Bursar's office, Room 102, College Hall, on October 1 and February 1 for the first and second terms, respectively. An addition is made to any fee not paid within one month. Students in arrears can receive no credit for work, and cannot be admitted to examinations.

THE SESSION of 1908-09 opened on Saturday, September 26, 1908, and will close on Saturday, May 29, 1909. Instruction is given on the afternoons of each week-day from 4.30 to 5.30; of evenings from 7 to 10, and on Saturdays, between the hours of 9.15 A. M. and 1.15 P. M. Lectures will not be given on the days which fall within the Thanksgiving, Christmas and Easter recesses of the College, nor upon legal holidays.

## COURSE OF STUDY.

The completion of sixty units of work is required of candidates for the bachelor's degree, a unit being one hour a week of lecture or recitation or two hours a week of laboratory work for one year.

The course of study consists of twenty-two units of required work, the remainder of the sixty units to be made up of electives.

No restrictions are laid upon the student as to the order in which he shall take any of the subjects in the course, excepting such as may follow from the natural sequence of related subjects, and from the limitations of the roster. The student usually will take as the required work in each of the branches named below the most elementary subjects offered, as these form in most cases the necessary basis for further advance in the same subjects. The student may pursue as many or as few units as he desires and receive credit for each subject successfully completed.

**NOTICE OF WITHDRAWAL** from courses should be in writing, accompanied by the matriculation card, and should be sent, *not to the instructor*, but to *the Dean*. When a student is registered for a course which is given in both terms, it is assumed that he wishes to continue work in the second term unless the office is notified to the contrary. Any change in course should be approved by the Dean, recorded in the office, and noted on the matriculation card.

If less than five students apply for any course, or if the number of students in a course falls below five, the course may be discontinued.

*Required Studies.*—Each student must take in

Chemistry.....	2	units.
English.....	6	"
Foreign Languages: 3 units in each of two, amount- ing to.....	6	"
History.....	2	"
Logic and Ethics.....	2	"
Mathematics.....	2	"
Physics.....	2	"

**NOTE.**—The required work in Foreign Languages may consist of work in any two foreign languages in which instruction to the extent of three units of work each is offered; but no student will be permitted to take in satisfaction of such requirement a language which he has not offered for admission, or in which he has not satisfied the admission requirements.

## COURSES OF INSTRUCTION.

## ASTRONOMY.

Assistant Professor E. DOOLITTLE.

(a) *Descriptive Astronomy*.—Saturday, 12.15-1.15 P. M. Room 106.

## BOTANY.

Professor MACFARLANE, Assistant Professor HARSHBERGER, Dr. KRAUTTER; Biological Hall.

(a) *Plant Life and Plant Economics*.—Professor MACFARLANE. Two hours lecture and demonstrations on economic botany. Saturday, 10.15 A. M.-12.15 P. M. Two units.

(b) *General Study of Plants*.—Dr. KRAUTTER. One hour lecture, two hours laboratory work. Saturday, 10.15 A. M.-1.15 P. M. Two units.

(c) *Classifications of Plants*.—Assistant Professor HARSHBERGER. One hour lecture, two hours laboratory work. Saturday, 10.15 A. M.-1.15 P. M. Two units.

See also under *Advanced Courses*.

## CHEMISTRY.

Professor SMITH, and Assistants.

(a) *General Chemistry*.—Professor SMITH, and Assistants. One hour lecture and three hours laboratory work. Lectures and practical work. Harrison Chemical Laboratory. Two units. Saturday, 9.15 A. M.-1.15 P. M.

(b) *Analytical Chemistry*.—Professor SMITH, and Assistants. One hour lecture and four hours laboratory work. Harrison Chemical Laboratory. Three units. Saturday, 9.15 A. M.-2.15 P. M.

## ECONOMICS.

Assistant Professor TOWER, Mr. WATSON.

(a) *General Geography*.—Assistant Professor TOWER. Two units. Saturday, 9-11 A. M. Logan Hall.

(b) *Elementary Economics*.—Mr. WATSON. Two units. Wednesday and Friday, 8-9 P. M. Logan Hall.

See also under *Advanced Courses*.

## ENGLISH.

Professor SCHELLING, Professor CHILD, Professor QUINN, Mr. O'BOLGER, and Mr. SHELLY.

- (d) *Elizabethan Dramatists*.—Professor SCHELLING. *Second Term*. Tuesday and Thursday, 4.15–5.15 P. M. One unit.
- (e) *Modern Essayists*.—Mr. SHELLY. *First Term*. Tuesday and Thursday, 4.15–5.15 P. M. One unit.
- (f) *The Modern Novel*.—Professor QUINN. *First Term*. Saturday, 9.15–11.15 A. M. Room 205. One unit.
- (g) *History of English Literature*.—Professor CHILD. *Second Term*. Saturday, 9.15–11.15 A. M. One unit.
- (h) *English Composition: Second Year*.—Mr. O'BOLGER. Saturday, 11.15 A. M.–1.15 P. M. Two units.

## ETHICS.

See under *Philosophy*.

## FINE ARTS.

Professor EVERETT, Assistant Professor OSBORNE.

- (a) *History of Painting*.—Professor EVERETT. Illustrated Lectures. Two units. Wednesday, 7–9 P. M.
- (b) *History of Sculpture*.—Professor EVERETT. Illustrated Lectures. Tuesday, 7–9 P. M.
- (c) *History of Architecture*.—Assistant Professor OSBORNE. Saturday, 11.15 A. M.–1.15 P. M. Two units.

## FRENCH.

Mr. VURPILLOT and Mr. DE LA ROCHELLE.

- (a) *Reading and Translation*.—Mr. DE LA ROCHELLE. Two units. Wednesday, 5–7 P. M.
- (b) *Grammar and Prose Composition*.—Mr. DE LA ROCHELLE. One unit. Thursday, 5.30–6.30 P. M.
- (c) *Reading and Translation*.—Mr. VURPILLOT. Two units. Wednesday and Friday, 7–8 P. M.
- (d) *Review of Grammar*.—Mr. VURPILLOT. One unit. Thursday, 5.30–6.30 P. M.

## GEOLOGY AND MINERALOGY.

Assistant Professor EHRENFELD, DR. TRAVIS.

- (c) *Historical and Stratigraphical Geology*.—Assistant Professor EHRENFELD. Lectures, one hour a week, two terms. Thursday, 4.30–5.30 P. M. Room 116, College Hall. One unit.

- (d) *Dynamic and Physiographic Geology*.—Assistant Professor EHRENFELD. One hour a week, two terms. Saturday, 9.15 A. M. Room 116, College Hall. One unit.
- (e) *Physical Determinative Mineralogy and Crystallography*.—Dr. TRAVIS. One hour a week, two terms. Saturday, 9.15 A. M. Room 16, College Hall. One unit.
- (f) *Descriptive Mineralogy*.—Dr. TRAVIS. One hour a week, two terms. Saturday, 10.15 A. M. Room 16, College Hall. One unit.

#### **GREEK.**

Dr. VLACHOS.

- (b) *Freshman Greek*.—Dr. VLACHOS. Three hours a week, two terms. Monday, Wednesday, Friday, 5.30–6.30 P. M.
- (c) *Beginners' Course*.—Dr. VLACHOS. Three hours a week, two terms. Monday, Wednesday, Friday, 4.30–5.30 P. M.
- (d) *Xenophon: continued*.—Dr. VLACHOS. Three hours a week, two terms. Omitted in 1908–09.

#### **GERMAN.**

Professor SHUMWAY and Assistant Professor WESSELHOEFT, Dr. DAVIS, Dr. FOGEL, and Dr. RIETHMÜLLER.

The courses are equivalent to the corresponding courses in the College and the preliminary requirements are the same in each instance.

- (a) *Prose Reading*.—Dr. RIETHMÜLLER. Equivalent to 322A. Friday, 7–9 P. M. Two units.
- (b) *Composition and Grammar*.—Dr. FOGEL. Equivalent to 322B. Tuesday, 4.30–5.30 P. M. One unit.
- (c) *Schiller's Dramas*.—Dr. DAVIS. Equivalent to 323A. First Term. Thursday, 4.30–6.30 P. M. One unit.
- (d) *Historical Prose*.—Dr. DAVIS. Equivalent to 323B. Second Term. Thursday, 4.30–6.30 P. M. One unit.
- (e) *Composition and Conversation*.—Assistant Professor WESSELHOEFT. Equivalent to 323C. Monday, 4.30–5.30 P. M. One unit.
- (f) *Goethe's Dramas*.—Professor SHUMWAY. Equivalent to 325B. First Term. Friday, 7–9 P. M. One unit.
- (g) *Lessing's Prose Works*.—Professor SHUMWAY. Equivalent to 324D. Second Term. Friday, 7–9 P. M. One unit.
- (h) *Advanced Course in German Conversation and Theme-Writing*.—Assistant Professor WESSELHOEFT. Equivalent to 324C. This

is the continuation of Course (e), with especial attention to the writing of German. Monday, 5.30-6.30 P. M. One unit.

#### HISTORY.

Assistant Professor HOWLAND, Dr. J. H. S. AIMES.

- (a) *Medieval History*.—Assistant Professor HOWLAND. The history of Europe from 395 to 1300. Wednesday, 7-9 P. M. Two units.
- (b) *Roman History*.—Assistant Professor HOWLAND. History of the Roman Republic from the time of the Gracchi to the death of Caesar. *First Term*. Saturday, 11.15-1.15. One unit.
- (c) *Roman History*.—Assistant Professor HOWLAND. History of the Empire from Augustus to Theodosius. *Second Term*. Saturday, 11.15-1.15 P. M. One unit.
- (d) *American Colonial History*.—Dr. J. H. S. AIMES. Tuesday and Thursday, 4.30-5.30 P. M. Two units.

See also under *Advanced Courses*.

#### LATIN.

Assistant Professor McDANIEL, Dr. KENT, Mr. McCARTNEY, Mr. BLANCKÉ, Mr. MYERS.

- (a) *Elementary Latin*.—*First Term*. One and a half units. Monday, Wednesday, and Friday, 4.30-5.30 P. M.
- (b) *Cæsar*.—*Second Term*. One and a half units. Monday, Wednesday, and Friday, 4.30-5.30 P. M.
- (c) *Cicero*.—Mr. BLANCKÉ. Two hours the first term. Tuesday, 5-6 P. M.; Saturday, 10.15-11.15, and one hour the second term, Saturday, 10.15-11.15 A. M. One and a half units.
- (d) *Virgil*.—Mr. MYERS. One hour the first term, Saturday, 12.15-1.15, and two hours the second term, Tuesday, 5-6 P. M., Saturday, 12.15-1.15 P. M. One and a half units.
- (e) *Elementary Prose Composition*.—Mr. McCARTNEY, Wednesday, 5.30-6.30 P. M. One unit.
- (f) *Livy*.—*First Term*. Assistant Professor McDANIEL. Monday, Wednesday, and Friday, 4.30-5.30 P. M. One and a half units.
- (g) *Ovid*.—*Second Term*. Assistant Professor McDANIEL. Monday, Wednesday, and Friday, 4.30-5.30 P. M. One and a half units.
- (h) *Horace*.—Dr. KENT. Monday, Wednesday, and Friday, 4.30-5.30 P. M. Three units.

## MATHEMATICS.

**Professor FISHER, Mr. CHAMBERS.**

- (a) *Solid Geometry*.—Mr. CHAMBERS. Schultze and Sevenoak's *Geometry*, Books VI-VIII. *First Term*. Tuesday and Thursday, 4.30-5.30 P. M. Room 121. One unit.
- (b) *Plane Trigonometry*.—Professor FISHER. Crawley's *Elements of Trigonometry, with Tables*. *First Term*. Tuesday and Thursday, 4.30-5.30 P. M. Room 117. One unit.
- (c) *Advanced Plane Trigonometry and Spherical Trigonometry*.—Professor FISHER. Crawley's *Elements of Trigonometry, with Tables*. *Second Term*. Tuesday and Thursday, 4.30-5.30 P. M. Room 117. One unit.
- (d) *Algebra*.—Professor FISHER. Fisher and Schwatt's *Higher Algebra*. Tuesday and Thursday, 5.30-6.30 P. M. Room 117. Two units.
- (e) *Analytic Geometry*.—Mr. CHAMBERS. C. Smith's *Conic Sections*. *Second Term*. Tuesday, Wednesday, and Thursday, 5-6. Saturday, 11.15-12.15 P. M. Room 121. Two units.  
To enter this course, a student must have completed course (b) or its equivalent.
- (f) *Differential and Integral Calculus*.—Professor FISHER. Granville's *Differential and Integral Calculus*. Tuesday and Thursday, 7-8 P. M. Room 117. Two units.  
To enter this course, a student must have completed courses (b), (d), (e), or their equivalents.
- (g) *The Teaching of Elementary and Secondary Mathematics*.—Mr. CHAMBERS. Saturday, 12.15-1.15 P. M. One unit.

This course will count either in group work, or as a free elective, but not as a required study (see p. 282). The hours assigned to any course may be changed, better to suit the convenience of members of the class.

See also under *Advanced Courses*.

## MINERALOGY.

See under *Geology*.

## PEDAGOGY.

**Assistant Professor YOCUM.**

- (c) *General Educational Principles*.—Wednesday, 7-9 P. M. Room 3, Third Floor, Library Building. Two units.

(d) *History of Education*.—Saturday, 9.15-11.15 A. M. Room 3, Third Floor, Library Building. Two units.  
See also under *Advanced Courses*.

#### PHILOSOPHY.

Assistant Professor SINGER, Dr. FLACCUS.

- (a) *Logic*.—Dr. SINGER. *First Term*. Tuesday, 7-9 P. M. One unit.
- (b) *Ethics*.—Dr. FLACCUS. *Second Term*. Tuesday, 7-9 P. M. One unit.
- (c) *Contemporary Moralists*.—Dr. FLACCUS. Friday, 7-9 P. M. Two units.

See also under *Advanced Courses*.

#### PHYSICS.

Mr. COPE.

- (a) *General Physics*.—Descriptive Physics, lectures and recitations. Goodspeed's *Revision of Gage's Principles of Physics*. Two terms. Monday, Wednesday, and Friday, 9-10 P. M.
- (b) *Physical Measurements*.—One hour lecture and three hours practical laboratory work for the year. Saturday, 9.15-11.15 P. M.

#### POLITICAL SCIENCE.

See under *Advanced Courses*.

#### PSYCHOLOGY.

Professor WITMER, Assistant Professor TWITMYER, Dr. CORNELL, Dr. LUDLUM, Dr. HOLMES, Dr. URBAN and Mr. FERNBERGER.

Psychological Laboratory, entrance west end of College Hall. Courses (a), (b) and (c) together, constitute a general outline of Psychology. The lectures may be attended without taking the laboratory work.

- (a) *Analytic Psychology*.—Assistant Professor TWITMYER. *First Term*. Lecture, Saturday, 11.15 A. M.-12.15 P. M. Laboratory, two hours additional.
- (b) *Physiological Psychology*.—Assistant Professor TWITMYER. *Second Term*. Lecture, Saturday, 11.15 A. M.-12.15 P. M. Laboratory, two hours additional.
- (c) *Genetic Psychology*.—Assistant Professor TWITMYER. Two terms. Lecture, Saturday, 10.15-11.15 A. M. Laboratory, two hours additional.

- (d) *The Psychological Clinic*.—Professor WITMER and Dr. LUDLUM. Two terms. Lectures and demonstrations, Saturday, 11.15 A. M.—12.15 P. M.
- (e) *Child-psychology*.—Dr. HOLMES. Two terms. Lectures, Saturday, 9.15—10.15 A. M.
- (f) *Seminar Course*.—Dr. HOLMES. Practical work in Child-psychology. Supplements Courses (d) and (e) and can be taken only in combination with one or both of these courses. Two terms. Saturday, 10.15—11.15 A. M.
- (g) *Mental and Physical Defects of School Children*.—Dr. CORNELL. Divided into two courses of one term each. I. Anatomy, physiology, and hygiene, with special reference to eye-strain, deafness, naso-pharyngeal obstruction, nervous disorders, and other defects of frequent occurrence. *First Term*. II. Practical problems of medical inspection and hygienic supervision; the diagnosis and correction of defects; the functions of the physician, school, nurse, teacher and parent. *Second Term*. Saturday, 12.15—1.15 P. M.
- (h) *Comparative and Abnormal Psychology*.—Dr. URBAN. *Second Term*. Friday, 7—9 P. M.
- (i) *Adolescence*.—Dr. HOLMES. *Second Term*. Monday, 8—9 P. M.  
See also under *Advanced Courses*.

#### **SOCIOLOGY.**

See under *Advanced Courses*.

#### **TRANSPORTATION AND COMMERCE.**

See under *Advanced Courses*.

#### **ZOOLOGY.**

Assistant Professors MOORE and CALVERT.

- (a) *General Zoology*.—One hour lecture and two hours laboratory work. Saturday, 9.15 A. M.—12.15 P. M. Biological Hall.

### ADVANCED COURSES.

The following courses, given in the Graduate School, are open also to advanced students in the College. Students in the College Courses for Teachers, who are qualified to pursue the work, may, upon application, be admitted to these courses (on a standing similar to that of undergraduates in Arts and Science), and have them, when satisfactorily completed, credited towards a Bachelor's degree.

#### BOTANY.

##### **Professor MACFARLANE.**

*Comparative Histology of Plants*.—Wednesday, 2.15–5 P. M. Two units.  
*Plant Irritability*.—Four units. Friday, 2.15–5 P. M. (Omitted in 1908–09.)  
*Comparative Morphology of the Angiosperma*.—Wednesday, 2.15–5 P. M. Four units.

##### **Assistant Professor HARSHBERGER.**

*Comparative Taxonomy of Plants*.—Tuesday, 2.15–5 P. M. Two units.  
*Comparative Morphology and Taxonomy of the Myxomycetes and Fungi*.—Tuesday, 2.15–5 P. M. Two units.  
*Comparative Morphology and Taxonomy of the Algae*.—Tuesday and Thursday, 2.15–5 P. M. (Omitted in 1908–09.)  
*Comparative Plant Distribution*.—Tuesday, 2.15–5 P. M. Two units.

##### **Dr. KRAUTTER.**

*Comparative Morphology of the Gymnosperma and Pteridophyta*.—Monday, 2.15–5 P. M. (Omitted in 1908–09.) Two units.

All of the work in Botany is conducted by means of lectures, seminar and original research in the Laboratories of the Botanical Department.

#### CLASSICAL LANGUAGES.

*The Literature of Christianity*.—Assistant Professor McDANIEL.  
 Monday, 7.30–9.30 P. M.

**ECONOMICS.**

**Professor PATTEN, Professor MEADE, Assistant Professor J. R. SMITH.**

*The Development of English Civilization.*—Professor PATTEN. Wednesday, Thursday, 2.15 P. M. Two units.

*Advanced Commercial Geography.*—Assistant Professor SMITH. Wednesday, 4.15–6 P. M. Two units.

*Investments.*—Professor MEADE. Wednesday, Thursday, Friday, 12.15–1.15 P. M.

**HISTORY.**

**Professor McMMASTER, Professor CHEYNEY, Professor AMES.**

*The United States and Europe.*—Professor McMMASTER. Wednesday, Friday, 11.15–12.15 P. M. (Omitted in 1908–09.)

*Constitutional History of the United States.*—Professor AMES. Tuesday, Thursday, 10.15–11.15 A. M.

*Relations between England and the Continental Countries from the Fourteenth to the Sixteenth Centuries.*—Professor CHEYNEY. (Omitted in 1908–09.)

*The British Empire.*—Professor CHEYNEY. Monday, Wednesday, 2.15–3.15 P. M.

Each of these courses runs two hours per week throughout the year and counts two units.

**MATHEMATICS.**

**Professor CRAWLEY, Professor FISHER and Assistant Professors SCHWATT and HALLETT.**

*Modern Analytic Geometry.*—Professor CRAWLEY. Tuesday, Thursday, 12.15–1.15 P. M.

*Solid Analytic Geometry.*—Professor CRAWLEY. (Omitted in 1908–09.)

*Differential Equations.*—Professor FISHER. Tuesday, Thursday, Friday, 9.15–10.15 A. M.

*Advanced Calculus.*—Professor FISHER. (Omitted in 1908–09.)

*Infinite Series and Products.*—Assistant Professor SCHWATT. Monday, Wednesday, 1 P. M.

*Introduction to Higher Algebra and Galois' Theory of Equations.*—Assistant Professor HALLETT. Second Term. Monday, Wednesday, Friday, 2.15–3.15 P. M.

*Introduction of Modern Algebra.*—Assistant Professor HALLETT. First Term. Monday, Wednesday, Friday, 2.15–3.15 P. M.

## PEDAGOGY.

**Assistant Professor YOCUM.**

*History of Education*.—Saturday, 2 P. M. Two units.

*Educational Systems and Ideals of the Ancient World*.—Thursday, 9.15 P. M. Two units. (Omitted in 1908-09.)

*Modern Educational Systems and Ideals*.—(Omitted in 1908-09.)

## PHILOSOPHY.

**Professor NEWBOLD, Assistant Professor SINGER, and Dr. FLACCUS.**

*History of Ancient Philosophy*.—Tuesday and Thursday, 12.15 P. M. Two units.

*History of Modern Philosophy*.—Assistant Professor SINGER. Monday, 8 P. M. Two units.

*Analysis of Ethical Theories*.—Dr. FLACCUS. Thursday, 4.15-6.15 P. M. Two units.

*Plato's Metaphysics, Anthropology and Cosmology*. Professor NEWBOLD.

*Philosophy of Nature. (Ancient, First Term; Modern, Second Term.)*—Assistant Professor SINGER. Monday and Wednesday, 10.15 A. M. Two units.

*Readings in Ancient Philosophy*.—Professor NEWBOLD. First Term. Monday and Friday, 10.15 A. M. One unit.

All of these courses (except Readings in Ancient Philosophy, which count one unit) extend throughout the year and count two units.

## POLITICAL SCIENCES.

**Professor ROWE, Dr. JONES.**

*Municipal Government and Institutions*.—Professor ROWE. Saturday, 11-1 P. M. Two units.

*International Law*.—Professor ROWE. Wednesday, Friday, 10.15-11.15 A. M. Two units.

*Constitutional Government and Constitutional Guarantees in the Republics of Latin America*.—Professor ROWE. Second Term.

*Readings in Political Science*.—Dr. JONES. (Omitted in 1908-09.)

*Modern Colonial Systems*.—Dr. JONES.

*Comparative Governments*.—Dr. JONES. (Omitted in 1908-09.)

**PSYCHOLOGY.**

Professor WITMER and Assistant Professor TWITMYER.

*Analytic Psychology*.—*First Term*. Tuesday, at 2.15 P. M. One unit.

*Physiological Psychology*.—*Second Term*. Tuesday, at 2.15 P. M. One unit.

*Genetic Psychology*.—Two terms. Monday at 2.15 P. M. Two units.

*Experimental Psychology*.—One hour lecture and 3 or 5 hours laboratory work. Hours are arranged according to convenience.

All of the courses in Psychology involve lectures and laboratory work. The first two courses mentioned are courses of three hours each. Genetic and Experimental Psychology are double courses and run three hours per week throughout the year. The units given to these courses are as stated, except where additional hours are arranged.

**SOCIOLOGY.**

Professor KELSEY, Assistant Professor MUSSEY.

*Theory of Sociology*.—Course in two sections. I. Assistant Professor MUSSEY, Saturday, 9-11 A. M. Two terms. II. Professor KELSEY, Monday, 4-6 P. M. Two terms. Four units.  
*Social and Vital Statistics*.—Assistant Professor MUSSEY. (Omitted in 1908-09.) Two units.

*Standards of Living*.—Assistant Professor MUSSEY. Tuesday, Thursday, 3.15-4.15 P. M.

**TRANSPORTATION AND COMMERCE.**

Professor JOHNSON.

*Railway Transportation*.—Tuesday and Thursday, 4-5 P. M. One unit.

*History of American Commerce*.—*First Term*. Tuesday, Thursday, 4.15-5.15 P. M.

Each course in Political Science, Economics, and Sociology runs two hours per week throughout the year and counts two units.

**ZOOLOGY.**

Professor MONTGOMERY, Assistant Professors MOORE and CALVERT,  
and Dr. LILLIE.

*Recent and Fossil Vertebrata*.—Monday, 9:15 A. M. Three units.

*Comparative Embryology of the Vertebrata*.—Three units.

*Comparative Anatomy and Embryology of the Invertebrata*.—Three  
units.

*Cytology*.—(Omitted in 1908-09.) Three units.

*Entomology*.—Wednesday, 2-5 P. M. Two units.

*Animal Behavior*.—(Omitted in 1908-09.) Two units.

*The Protozoa*.—(Omitted in 1908-09.) Two units.

For the rating of the courses in Botany and Zoölogy the  
student is referred to the circular of the Graduate School.

**SATURDAY COURSES FOR TEACHERS.**

The following courses given on Saturday mornings will be open, as in former years, to qualified persons. Some of these are described on preceding pages under the title of College Courses for Teachers. They are mentioned again here for the convenience of such persons as can attend on Saturdays only.

**TUITION.**

The charge for tuition will be at the rate of ten dollars per year (five dollars per term) for each hour per week of instruction.

**SUBJECTS AND COURSES.****ASTRONOMY.**

Assistant Professor DOOLITTLE.

(a) *Descriptive Astronomy*.—Saturday, 12.15-1.15 P. M. Room 106, College Hall.

**BOTANY.**

Professor MACFARLANE, Assistant Professor HARSHBERGER, Dr. KRAUTTER.

(a) *Plant Life and Plant Economics*.—Saturday, 10.15 A. M.-12.15 P. M. Biological Hall.  
(b) *Classification of Plants*.—Saturday, 10.15 A. M.-1.15 P. M. Biological Hall.  
(c) *General Study of Plants*.—Saturday, 10.15 A. M.-12.15 P. M. Biological Hall.

**CHEMISTRY.**

Professor SMITH and Assistants.

(a) *General Chemistry*.—Saturday, 9.15 A. M.-1.15 P. M. Harrison Laboratory.  
(b) *Analytical Chemistry*.—Saturday, 9.15 A. M.-2.15 P. M. Harrison Laboratory.

**ECONOMICS.**

Dr. TOWER.

(a) *General Geography*.—Saturday, 9.15-11.15 A. M. Logan Hall.

## ENGLISH.

Professor CHILD, Professor QUINN, and Mr. O'BOLGER.

- (f) *The Modern Novel*.—Assistant Professor QUINN. *First Term*. Saturday, 9.15-11.15 A. M. Room 205, College Hall.
- (g) *History of English Literature*.—Professor CHILD. *Second Term*. Saturday, 9.15-11.15 A. M. College Hall.
- (h) *English Composition: Second Year*.—Mr. O'BOLGER. Saturday, 11.15 A. M.-1.15 P. M. Room 213, College Hall.

## FRENCH.

Mr. LA ROCHELLE.

- (1) *Elementary Course*.—Mr. LA ROCHELLE. Saturday, 11.15 A. M.-12.15 P. M. Room 217, College Hall.
- (2) *Intermediate Course*.—Mr. LA ROCHELLE. Saturday, 9.15-10.15 A. M. Room 217, College Hall.

## FINE ARTS.

Assistant Professor OSBORNE.

- (c) *History of Architecture*. Saturday, 11.15 A. M.-1.15 P. M. College Hall.

## GEOLOGY AND MINERALOGY.

Assistant Professor EHRENFELD and Dr. TRAVIS.

- (b) *Dynamic and Physiographic Geology*.—Assistant Professor EHRENFELD. Saturday, 9.15 A. M. Room 116, College Hall.
- (c) *Physical Determinative Mineralogy and Crystallography*.—Dr. TRAVIS. Saturday, 9.15 A. M. Room 16, College Hall.
- (d) *Descriptive Mineralogy*.—Dr. TRAVIS. Saturday, 10.15 A. M. Room 116, College Hall.

## GERMAN.

Professor LEARNED, Assistant Professor WESSELHOEFT.

- (1) *Composition and Reading*.—Assistant Professor WESSELHOEFT. Saturday, 11.15 A. M.-12.15 P. M. Room 218, College Hall.
- (2) *Elementary German*.—Assistant Professor WESSELHOEFT. Saturday, 11.15 A. M.-12.15 P. M. Room 218, College Hall.  
(Omitted in 1908-09.)

- (3) *Advanced Composition and Conversation*.—Assistant Professor WESSELHOEFT. Saturday, 12.15-1.15 P. M. Room 218, College Hall. (Omitted in 1908-09.)
- (4) *Advanced Reading*.—Assistant Professor WESSELHOEFT. Saturday, 12.15-1.15 P. M. Room 218, College Hall.
- (5) *Lectures on the History of German Literature*.—Professor LEARNED. Saturday, 1.15 P. M. Library (third floor).

### HISTORY.

Assistant Professor HOWLAND.

- (b) *Roman History—History of the Roman Republic from the time of the Gracchi to the death of Cæsar. First Term.* Saturday, 11.15 A. M.-1.15 P. M. Room 204, College Hall.
- (c) *Roman History—History of the Empire from Augustus to Theodosius. Second Term.* Saturday, 11.15 A. M.-1.15 P. M. Room 204, College Hall.

### PEDAGOGY.

Assistant Professor YOCUM.

- (b) *History of Education*.—Saturday, 9.15-11.15 A. M. Room 3, Third Floor, Library Building.

### PHYSICS.

Professor GOODSPED, Dr. BARKER.

- (b) *Physical Measurements*.—One hour lecture, three hours laboratory work. Saturday, 9.15 A. M.-1.15 P. M. Laboratory of Physics.

### PSYCHOLOGY.

Professor WITMER, Dr. TWITMYER, Dr. CORNELL, Dr. LUDLUM, Dr. HOLMES, Dr. URBAN, and Mr. FERNBERGER.

- (a) *Analytic Psychology*.—Dr. TWITMYER. *First Term.* Saturday, 11.15 A. M.-12.15 P. M. Room 6, College Hall.
- (b) *Physiological Psychology*.—Dr. TWITMYER. *Second Term.* Saturday, 11.15 A. M.-12.15 P. M. Room 6, College Hall.
- (c) *Genetic Psychology*.—Dr. TWITMYER. Saturday, 10.15-11.15 A. M. Room 6, College Hall.
- (d) *Psychological Clinic*.—Professor WITMER and Dr. LUDLUM. Saturday, 11.15 A. M.-12.15 P. M. College Hall.

- (e) *Child-Psychology*.—Dr. HOLMES. Saturday, 9.15-10.15 A. M.  
College Hall.
- (f) *Seminar Course*.—Dr. HOLMES. Saturday, 10.15-11.15 A. M.  
College Hall.
- (g) *Mental and Physical Defects of School Children*.—Dr. CORNELL.  
Saturday, 12.15-1.15 P. M. College Hall.

#### ZOOLOGY.

Professor MONTGOMERY, Dr. MOORE, Dr. CALVERT.

- (a) *General Zoology*.—One hour lecture, two hours laboratory work. Saturday, 9.15 A. M.-12.15 P. M. Biological Hall.

**SUMMER SCHOOL.****SESSION OF 1908.****OFFICERS OF ADMINISTRATION.****CHARLES C. HARRISON, LL. D., PROVOST.****EDGAR F. SMITH, PH. D., Sc. D., LL. D., VICE-PROVOST, and Professor of Chemistry.****JOSIAH H. PENNIMAN, PH. D., LL. D., Professor of English Literature, and DEAN OF THE COLLEGE FACULTY.****A. DUNCAN YOCUM, PH. D., Assistant Professor of Pedagogy, and DIRECTOR OF THE SUMMER SCHOOL.****ADMINISTRATIVE COMMITTEE.****Dr. YOCUM, Chairman; Professor SCHELLING, Professor FISHER, Assistant Professor HOWLAND, Professor KELSEY, Assistant Professor TWITMYER.**

During the summer of 1908 courses of instruction were offered in the following subjects:

Chemistry,	Latin,
English,	Mathematics,
French,	Music,
Geology,	Pedagogy,
German,	Philosophy,
Greek,	Physics,
History,	Psychology,
Italian,	Spanish.

The session opened on Monday, July 6, and closed on Saturday, August 15, 1908. The session for 1909 will open Tuesday, July 6, and close Tuesday, August 17th.

**CREDITS.**

In most of the courses, lectures are given in periods of one hour during every day in the week, except on Saturdays, and for such courses of five hours a week one unit credit is allowed. Laboratory courses are subject to special regulation.

Students who pursue courses with satisfaction to the instructors, and pass the necessary examinations, receive certificates from the University. No entrance examinations are required for admission to the Summer School, and the School is open to men and women.

When, in the opinion of any department, the instruction offered in any subject in that department becomes equivalent to the instruction given in any specified subject in the regular College course, credit toward a degree may be given to those who pursue these Summer School subjects successfully, and who pass satisfactory examinations therein, provided they satisfy the requirements for matriculation in the College.

Regularly matriculated students in the University may remove their conditions by attendance upon the Summer School courses, and by passing satisfactory examinations therein, provided the work done covers substantially the same ground as that covered by the subject in which the condition was given.

#### GRADUATE WORK.

Courses are offered in several departments, and students will receive credit for such work if they matriculate afterwards in the Graduate School.

A recent ruling of the Board of Trustees makes it possible for the degree of Master of Arts, which is peculiarly the teachers' degree, to be attained by work done exclusively in the Summer School, without any fixed limit to the number of years taken in earning the necessary credits.

#### FEES.

For one lecture course of five hours a week ..... \$15.00  
Each additional lecture course ..... 10.00

For special and laboratory courses additional charges will be made.

#### OUTLINE OF COURSES—SESSION OF 1908.

##### CHEMISTRY.

**EDGAR FAHS SMITH, PH. D., Sc. D., LL. D., Vice-Provost of the University, and Professor of Chemistry.**

**WALTER THOMAS TAGGART, PH. D., Assistant Professor of Chemistry.**

**DANIEL LINCOLN WALLACE, Instructor in Analytical Chemistry.**

JOEL HENRY HILDEBRAND, PH. D., Instructor in Chemistry.  
 GEORGE WILLIAM PLUMMER, B. S., Instructor in Chemistry.  
 HIRAM S. LUKENS, B. S., Instructor in Chemistry.

- CHEMISTRY 1. *Elementary Chemistry.*
- CHEMISTRY 2. *Qualitative Analysis.*
- CHEMISTRY 3. *Quantitative Analysis.*
- CHEMISTRY 5. *Assaying.*

#### COURSES OPEN TO GRADUATES AND UNDERGRADUATES.

- CHEMISTRY 4. *Electro-Chemistry.*
- CHEMISTRY 6. *Physical Chemistry.*
- CHEMISTRY 7. *Organic Chemistry.*
- CHEMISTRY 8. *Food Analysis.*

#### ENGLISH.

THOMAS D. O'BOLGER, A. M., Instructor in English.  
 PERCY V. D. SHELLY, A. M., Instructor in English.

- ENGLISH 1. *Composition (first year).*
- ENGLISH 2. *Composition (second year).*
- ENGLISH 3. *College Entrance Requirements, B.*
- ENGLISH 9. *Modern Essayists.*
- ENGLISH 10. *History of the English Language.*

#### FRENCH.

REV. FLORIAN JULIEN CHARLES VURPILLOT, A. B., B. D., Instructor in French.  
 DONALD MACKENZIE, A. B., A. M., Instructor in French.

- FRENCH 1. *Elementary French.*
- FRENCH 2. *Beginners' Course in French Reading.*
- FRENCH 3. *Intermediate French Grammar, Conversation and Translation.*
- FRENCH 4. *Advanced French.*
- FRENCH 5. *Advanced Scientific French.*
- FRENCH 6. *French Conversation.*
- FRENCH 7. *French Literature.*

**GEOLOGY.**

**CHARLES TRAVIS**, Ph. D., Instructor in Geology and Mineralogy.  
**EDGAR THEODORE WHERRY**, B. S.

1. *Descriptive Mineralogy, A.*
2. *Descriptive Mineralogy, B.*
3. *Dynamical and Structural Geology.*
4. *Historical and Stratigraphic Geology.*

**GERMAN.**

**DANIEL BUSSIER SHUMWAY**, Ph. D., Professor of German.  
**EDWIN M. FOGEL**, Ph. D., Instructor in German.

**GERMAN 1.** *Elementary German.*  
**GERMAN 2.** *Beginners' Course in Reading German.*  
**GERMAN 3.** *Intermediate German Grammar and Composition.*  
**GERMAN 4.** *Intermediate German Reading.*  
**GERMAN 5.** *Course in German Conversation.*  
**GERMAN 6.** *Advanced German Reading.*  
**GERMAN 7.** *Scientific German.*  
**GERMAN 8.** *Advanced Course in German Conversation and Theme-Writing.*

**GREEK.**

**EUGENE STOCK McCARTNEY**, A. B., Assistant in Greek and Latin.

**GREEK 1.** *Beginners' Course.*  
**GREEK 2.** *Xenophon's Anabasis.*

**HISTORY.**

**ARTHUR CHARLES HOWLAND**, Ph. D., Assistant Professor of Medieval History.  
**EUGENE CAMPBELL BARKER**, A. B., M. A., Instructor in History,  
 University of Texas.

**HISTORY 2.** *Roman History.*  
**HISTORY 3.** *History of England during the Tudor Period.*  
**HISTORY 4.** *Territorial Expansion of the United States in Its Relation to Slavery, 1783-1850.*

**COURSES OPEN TO GRADUATES AND UNDERGRADUATES.**

**HISTORY 1.** *Medieval History.*

**ITALIAN.****ATTILIO SEDICO, A. M.**ITALIAN 1. *Beginners' Course.*ITALIAN 2. *Advanced Course.***LATIN.****ROLAND GRUBB KENT, M. A., Ph. D., Instructor in Greek and Latin.  
EUGENE STOCK McCARTNEY, A. B., Assistant in Greek and Latin.**LATIN 1. *General Course, Illustrated.*LATIN 2. *Beginners' Course.*LATIN 3. *Cæsar's Gallic War.*LATIN 4. *Cicero's Orations.*LATIN 5. *Vergil's Æneid.*LATIN 6. *Prose Composition.***MATHEMATICS.****ISAAC JOACHIM SCHWATT, Ph. D., Assistant Professor of Mathematics.****GEORGE HERVEY HALLETT, Ph. D., Assistant Professor of Mathematics.****FREDERICK HOLLISTER SAFFORD, Ph. D., Assistant Professor of Mathematics.****GEORGE GAILBY CHAMBERS, A. B., Instructor in Mathematics.**MATHEMATICS 1. *The Teaching of Elementary Mathematics.*MATHEMATICS 2. *Elementary Algebra (To Quadratics).*MATHEMATICS 3. *Elementary Algebra (Quadratics and beyond).*MATHEMATICS 4. *Plane Geometry.*MATHEMATICS 5. *Solid Geometry.*MATHEMATICS 6. *Advanced Algebra.*MATHEMATICS 7. *Plane Trigonometry.*MATHEMATICS 8. *Plane and Spherical Trigonometry.*MATHEMATICS 9. *Analytic Geometry.*MATHEMATICS 10. *Differential Calculus.*MATHEMATICS 11. *Integral Calculus.***COURSES OPEN TO GRADUATES AND UNDERGRADUATES.**MATHEMATICS 12. *Definite Integrals.*MATHEMATICS 13. *Differential Equations.*MATHEMATICS 14. *Theory of Functions of a Complex Variable.*

**MUSIC.**

**HUGH ARCHIBALD CLARKE**, Mus. Doc., Professor of the Science of Music.

**MUSIC 1.** *Course in Harmony.*

**MUSIC 2.** *Course in Strict Counterpoint.*

**PEDAGOGY.**

**A. DUNCAN YOCUM**, Ph. D., Assistant Professor of Pedagogy.

**SPECIAL LECTURERS IN PEDAGOGY.**

**SAMUEL T. DUTTON**, Superintendent of Horace Mann School, Teachers' College, Columbia University.

**JOHN P. GARBER**, Ph. D., Associate Superintendent of Public Schools, Philadelphia.

**JOHN KENNEDY**, Superintendent of Schools, Batavia, N. Y.

**M. VINCENT O'SHEA**, B. L., Professor of Science and Art of Education, University of Wisconsin.

**J. M. RICE**, Ph. D., Editor of *The Forum*, New York City.

**JULIA RICHMAN**, District Superintendent of Public Schools, New York City.

**NATHAN C. SCHAEFFER**, Ph. D., LL. D., State Superintendent of Public Education, Pennsylvania.

**T. D. SENSOR**, State Department of Public Instruction, New Jersey.

**W. A. STECHER**, G. G., Director of Physical Education in Public Schools, Philadelphia.

**M. BATES STEPHENS**, A. M., State Superintendent of Public Instruction, Maryland.

**INSTRUCTORS IN SCHOOL OF OBSERVATION.**

**ELIZABETH B. DAVIDSON**, Second Grade. Supervisor of Writing, Friends' Schools, Philadelphia.

**M. FRANCES FREELAND**, Fourth Grade. Assistant Critic Teacher, State Normal School, Trenton, N. J.

**HARRIET B. KELLER**, Fifth Grade. Supervising Principal, Torresdale School, Philadelphia.

**PERSIS K. MILLER**, Sixth Grade. Supervisor of Practice Work, Public Schools, Baltimore.

**LILLIAN E. ROGERS**, Seventh Grade. Teacher, Seventh Grade, Horace Mann School, Teachers' College, Columbia University.

**EVA T. SEABROOK**, Third Grade. Supervising Principal, Passaic, N. J.

**CHARLES A. WAGNER**, A. B., Eighth Grade and Principal. Professor of Pedagogy, State Normal School, West Chester, Pa.

**HELEN KATHY YERKES**, First Grade. Supervising Principal, George H. Thomas Combined Primary School, Philadelphia, Pa.

**PEDAGOGY 1.** *General Educational Method.*

**PEDAGOGY 2.** *History of Education.*

**PEDAGOGY 3.** *The Physical Education of Children.*

**PEDAGOGY 4.** *Current Educational Topics.*

**PEDAGOGY 5.** *Seminar in Elementary Education.*

#### SCHOOL OF OBSERVATION.

**CHARLES A. WAGNER**, Principal.

**W. A. STECHER**, Director of Physical Education.

**WALTER STEWART CORNELL**, M. D., Medical Inspector.

#### PHILOSOPHY.

**EDGAR ARTHUR SINGER, JR.**, Ph. D., Assistant Professor of Philosophy.

**PHILOSOPHY 1.** *Logic.*

**PHILOSOPHY 2.** *Development of Natural Science.*

#### PHYSICS.

**HORACE CLARK RICHARDS**, Ph. D., Assistant Professor of Physics.

**ROBERT HARBISON HOUGH**, Ph. D., Assistant Professor of Physics.

**HAROLD CHARLES BARKER**, Ph. D., Instructor in Physics.

**PHYSICS 1.** *General Physics.*

**PHYSICS 2.** *Experimental Physics.*

**PHYSICS 4.** *Laboratory Course.*

**PHYSICS 9.** *Theory of Magnetism and Electricity.*

#### COURSES OPEN TO GRADUATES AND UNDERGRADUATES.

**PHYSICS 3.** *Advanced Laboratory Work.*

#### PSYCHOLOGY.

**LIGHTNER WITMER**, Ph. D., Professor of Psychology.

**EDWIN BURKETT TWITMYER**, Assistant Professor of Psychology.

**JACOB DANIEL HEILMAN**, Assistant in Psychology.

## LECTURER.

SEYMOUR DEWITT LUDLUM, Instructor in Neuro-pathology, and  
Neurologist to the Psychological Clinic.

- PSYCHOLOGY 1. *Modern Psychology.*
- PSYCHOLOGY 2. *Child Psychology.*
- PSYCHOLOGY 3. *Analytical Psychology.*
- PSYCHOLOGY 4. *Physiological Psychology.*
- PSYCHOLOGY 5. *Advanced Experimental Psychology.*
- PSYCHOLOGY 6. *Advanced Child Psychology.*
- PSYCHOLOGY 7. *The Psychological Clinic.*

## SPANISH.

DONALD MACKENZIE, A. B., A. M., Instructor in Romance Languages  
and Literature.

- SPANISH. *Course for Beginners.*

## **GRADUATE SCHOOL.**

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### **FACULTY.**

**CHARLES C. HARRISON, LL. D., PROVOST.**

**EDGAR F. SMITH, PH. D., SC. D., LL. D., VICE-PROVOST, and  
Professor of Chemistry.**

**GEORGE F. BARKER, M. D., SC. D., LL. D., Emeritus Professor  
of Physics.**

**MORTON W. EASTON, PH. D., Professor of English and Com-  
parative Philology.**

**JOHN BACH McMASTER, A. M., LITT. D., LL. D., Professor  
of American History.**

**REV. HERMANN V. HILPRECHT, PH. D., D. D., LL. D., CLARK  
Research Professor of Assyriology, and Professor of Semitic  
Philology and Archaeology.**

**MORRIS JASTROW, JR., PH. D., Professor of Semitic Languages.**

**WILLIAM A. LAMBERTON, A. M., LITT. D., Professor of the  
Greek Language and Literature.**

**SIMON N. PATTEN, PH. D., LL.D., Professor of Political Economy.**

**FELIX E. SCHELLING, A. M., PH. D., LITT. D., JOHN WELSH  
CENTENNIAL Professor of History and English Literature.**

**ARTHUR W. GOODSPEED, PH. D., Professor of Physics.**

**EDWIN S. CRAWLEY, PH. D., THOMAS A. SCOTT Professor of  
Mathematics.**

**GEORGE E. FISHER, A. M., PH. D., Professor of Mathe-  
matics.**

**EDWARD P. CHEYNEY, A. M., Professor of European History.**

**HUGO A. RENNERT, PH. D., Professor of Romanic Languages  
and Literatures.**

**JOHN M. MACFARLANE, D. SC., Professor of Botany.**

**AMOS P. BROWN, PH. D., Professor of Mineralogy and Geology.**

**HERBERT EDWARD EVERETT, Professor of the History of Art.**

**LIGHTNER WITMER, PH. D., Professor of Psychology.**

**WILLIAM ROMAINE NEWBOLD, PH. D., ADAM SEYBERT  
Professor of Intellectual and Moral Philosophy.**

CHARLES L. DOOLITTLE, C. E., Sc. D., FLOWER Professor of Astronomy.

MARJON D. LEARNED, PH. D., L. H. D., Professor of the Germanic Languages and Literatures.

JOSIAH H. PENNIMAN, PH. D., LL. D., Professor of English Literature.

EMORY R. JOHNSON, PH. D., Professor of Transportation and Commerce.

LEO S. ROWE, PH. D., LL. D., Professor of Political Science.

ISAAC J. SCHWATT, PH. D., Assistant Professor of Mathematics.

DANIEL B. SHUMWAY, PH. D., Professor of German Philology.

WILLIAM N. BATES, PH. D., Professor of Greek.

CLARENCE G. CHILD, PH. D., L. H. D., Professor of English.

JOHN C. ROLFE, A. M., PH. D., Professor of the Latin Language and Literature.

HERMAN V. AMES, A. M., PH. D., Professor of American Constitutional History and DEAN OF THE FACULTY.

EDGAR A. SINGER, JR., PH. D., Assistant Professor of Philosophy.

WILLIAM E. LINGELBACH, PH. D., Professor of Modern European History.

WALTON B. McDANIEL, A. M., PH. D., Assistant Professor of Classical Philology.

REV. ALBERT T. CLAY, PH. D., Assistant Professor of Semitic Philology and Archaeology.

PAUL PHILIPPE CRET, Arch. Diplômé du Gouvernement Français, Professor of Design.

HORACE C. RICHARDS, PH. D., Assistant Professor of Physics.

GEORGE H. HALLETT, A. M., PH. D., Assistant Professor of Mathematics.

ARTHUR H. QUINN, PH. D., Professor of English.

JAMES T. YOUNG, PH. D., Professor of Public Administration.

ERIC DOOLITTLE, C. E., Assistant Professor of Astronomy.

CORNELIUS WEYGANDT, PH. D., Professor of English Literature.

EDWARD S. MEADE, PH. D., Professor of Finance.

CARL KELSEY, PH. D., Professor of Sociology.

ARTHUR C. HOWLAND, PH. D., Assistant Professor of Mediaval History.

OWEN L. SHINN, PH. D., Assistant Professor of Chemistry.

WALTER T. TAGGART, PH. D., Assistant Professor of Chemistry.

JOHN W. HARSHBERGER, PH. D., Assistant Professor of Botany.

GEORGE WALTER DAWSON, Assistant Professor of Drawing.

FREDERICK EHRENFIELD, PH. D., Assistant Professor of Geology and Mineralogy.

ALBERT DUNCAN YOCUM, PH. D., Assistant Professor of Pedagogy.

J. RUSSELL SMITH, PH. D., Assistant Professor of Industry.

J. PERCY MOORE, PH. D., Assistant Professor of Zoölogy.

PHILIP P. CALVERT, PH. D., Assistant Professor of Zoölogy.

EDWIN B. TWITMYER, M. S., PH. D., Assistant Professor of Psychology.

CHARLES FRANCIS OSBORNE, Assistant Professor of the History of Architecture.

FREDERICK H. SAFFORD, A. M., PH. D., Assistant Professor of Mathematics.

SOLOMON HUEBNER, M. S., PH. D., Assistant Professor of Commerce.

HENRY RAYMOND MUSSEY, PH. D., Assistant Professor of Sociology.

THOMAS H. MONTGOMERY, JR., PH. D., Professor of Zoölogy.

HENRY H. DONALDSON, PH. D., Sc. D., Professor of Neurology, the Wistar Institute of Anatomy and Biology.

ROBERT H. HOUGH, A. M., PH. D., Assistant Professor of Physics.

WALTER S. TOWER, A. M., PH. D., Assistant Professor of Geography.

## LECTURERS.

JOSEPH H. HART, PH. D., Physics.

HAROLD CHARLES BARKER, A. M., PH. D., Physics.

GEORGE B. GORDON, Sc. D., Anthropology.

EDWARD Z. DAVIS, PH. D., Germanics.

ROLAND G. KENT, A. M., PH. D., Greek and Latin.

LOUIS KRAUTTER, JR., PH. D., Botany.  
EDWARD MILLER FOGEL, PH. D., Germanics.  
LOUIS W. FLACCUS, PH. D., Philosophy.  
J. P. WICKERSHAM CRAWFORD, PH. D., Romanic Languages.  
OLIVER E. GLENN, A. M., PH. D., Mathematics.  
RICHARD H. RIETHMUELLER, PH. D., Germanics.  
CHARLES TRAVIS, B. S. in C. E., PH. D., Mineralogy.  
RALPH S. LILLIE, PH. D., Zoölogy.  
THOMAS P. MCCUTCHEON, JR., PH. D., Chemistry.  
JOEL H. HILDEBRAND, PH. D., Chemistry.  
CHESTER LLOYD JONES, B. L., PH. D., Political Science.  
FLORIAN J. C. VURPILLOT, A. B., B. D., French.  
THOMAS W. MITCHELL, PH. D., Finance.  
FREDERICK M. URBAN, PH. D., Psychology.

#### LECTURERS AND RESEARCH FELLOWS.\*

HUBERT H. S. AIMES, PH. D., History.  
GEORGE D. HADZSITS, A. M., PH. D., Latin.  
AMANDUS JOHNSON, A. M., PH. D., Germanics.  
CLARK D. LAMBERTON, A. M., PH. D., Classics.  
EDWARD SAPIR, A. M., PH. D., Anthropology.

#### EXECUTIVE COMMITTEE.

Professor AMES, *Dean*, *Chairman, ex-officio*; Professor SMITH, *Vice-Provost, ex-officio*; Professor CHILD, Professor CRAWLEY, Professor LAMBERTON, Professor PATTEN, Professor WITMER.

The Graduate School offers advanced instruction in the various branches of Literature and Science. The instruction is intended primarily for persons who have profited by the advantages of a full college course, and who are desirous of continuing their studies upon lines more strictly defined and specialized. Others, however, may be admitted to study in the Department under the provisions hereinafter specified.

The session of 1908-09 opened on Tuesday, September 29, 1908; that of 1909-10 will open on Tuesday, September 28, 1909.

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\* Authorized to give instruction under the Faculty of the Graduate School.

## ARRANGEMENT OF COURSES.

The courses of instruction offered in the Graduate School are arranged under the seventeen following groups:

- I. Archaeology and Ethnology.
- II. Astronomy.
- III. Botany and Zoology.
- IV. Chemistry.
- V. Classical Languages.
- VI. Economics, Politics and Sociology.
- VII. English.
- VIII. Fine Arts.
- IX. Geology and Mineralogy.
- X. Germanic Languages.
- XI. History.
- XII. Indo-European Philology.
- XIII. Mathematics.
- XIV. Philosophy, Ethics, Psychology and Pedagogy.
- XV. Physics.
- XVI. Romanic Languages.
- XVII. Semitics.

All persons authorized to give instruction within a group constitute the "Group Committee." The several Group Committees have charge of the arrangement of courses, and the oversight of students taking their principal subject within the groups.

The instruction given within a group is classified under the headings, "lecture courses," "seminary courses," and "laboratory courses."

In stating the minimum requirements for residence and degrees a "standard" course is used as a unit: this is a lecture course of one hour a week for one academic year. The lecture courses as actually given may be either multiples or fractional parts of this standard. The credit value of seminary and laboratory courses in terms of the standard is variable, and is determined in each case by the Group Committee.

## ADMISSION.\*

Students desiring to enter the Graduate School must present themselves in person to the Dean.

Any person holding a baccalaureate degree in Arts, Letters, Phi-

\* Full information touching the regulations governing the payment of fees and deposits will be found on page 316.

losophy, or in Pure or Applied Science, granted by the University of Pennsylvania, or by any college or university whose degrees are recognized by this University, will be admitted as a regular student by the Dean, provided he be found prepared to undertake the graduate work selected. Degrees in Law, Music, Theology, Medicine, Dentistry, Veterinary Medicine, or Pharmacy, are not included. *Admission to the Graduate School does not necessarily imply candidacy for a degree, but does imply that the student possesses the ability to pursue with profit the work he undertakes.*

Students already registered as candidates for a degree in other departments of the University are allowed to pursue courses in the Graduate School, and regular students of the Graduate School are allowed to pursue courses in other departments, upon receiving the consent in writing of the Deans of the departments concerned.

After admission, each student will be furnished with a matriculation card: no student who cannot show his matriculation card will be allowed to take any course. Matriculation cards must be renewed at the beginning of each year. For such renewal, personal application must be made to the Dean.

Upon application to the Dean, a person who does not hold a satisfactory baccalaureate degree, but who is qualified to pursue a course or courses with profit, may be admitted as an "auditor" to any course, subject to the consent of the instructor in charge of the course. Auditors will not be permitted to become candidates for a higher degree.

#### CANDIDACY.

Regular students only are qualified to become candidates for degrees. Special application for admission to candidacy must be made to the Executive Committee.

A student who desires to become a candidate for the Master's degree should apply for candidacy as soon as possible after matriculation.

A student who is entering upon graduate work for the first time, and who desires to become a candidate for the Doctor's degree, should not apply for candidacy until he has worked for some months in the Graduate School, and has become known to his instructors.

The application for candidacy for the Doctor's degree must be endorsed by the chairman of the Group Committee in which the applicant proposes to take his major subject, and must include certificates setting forth that he possesses a good reading knowledge of French and German.

## RESIDENCE.

All candidates for higher degrees are required to spend at least one year in residence at this University. To be regarded as in residence at this University, a student must complete within one academic year not less than six standard courses or their equivalent, except as hereinafter provided for the Master's degree.

Work done at other universities may be accepted by the several Group Committees in lieu of a part of the work required for a degree.

Leave of absence is granted by the Executive Committee under the following circumstances only:

(a) To a student who has completed all resident work required of him by the Group Committee with which he takes his major work, provided the total amount of his resident work be not less than twenty-four standard courses or their equivalent, and who now desires to prepare the thesis *in absentia* under conditions satisfactory to the Committee.

(b) To a student who, having had at least one year of work in the Graduate School, is working in residence at another university, with the intention of returning to this University to take his degree.

(c) For a term, or part of a term, to a student presenting an application explaining the reasons for his proposed absence and affirming his intention to resume work the following term.

## DEGREES.

The degrees conferred in the Graduate School are Master of Arts (A. M.), Master of Science (M. S.), and Doctor of Philosophy (Ph. D.). (For regulations in Summer School, see page 321.)

All recommendations for the higher degree must originate with the Group Committees under whose supervision the candidate has been pursuing his work. No student can acquire a right to such recommendation merely by attending lectures, passing examinations, or by formal compliance with prescribed conditions. The requirements hereinafter specified must therefore be regarded as minimum requirements only, the right remaining with any Group Committee to refuse to admit a student to examination for a higher degree.

## THE MASTER'S DEGREE.

The work for the Master's degree must include one year in residence, as defined above, except that in case of continuous work at this University the minimum of twelve standard courses may be distributed through a term of three years. The candidate will be

allowed to elect any courses offered by the Faculty, subject to the consent of the Dean. He will be required to complete not less than twelve standard courses, or their equivalent, to the satisfaction of the Committees offering them. *The completion of the minimum requirement of twelve courses confers no right upon the student to be admitted to examination.* If he passes his examinations he will be presented by the Dean to the Faculty as a candidate for the Master's degree. The Faculty will inquire into his credentials, and, if these are found satisfactory, will recommend him to the Corporation for the degree.

#### THE DOCTOR'S DEGREE.

The degree of Doctor of Philosophy is conferred solely in recognition of marked ability and high attainments in some definite branch of learning.

The degree will in no case be conferred before the expiration of two years from the date of the candidate's baccalaureate degree, or upon any candidate who has not completed in this University, or in other universities, twenty-four standard courses or their equivalent. The aim of the latter requirement is to insure the candidate's having had the equivalent of at least two full academic years of resident study, under competent direction, as a foundation for the private reading and research which constitute the more important part of his work. A student of ability will usually be able to attain his degree in three years, but one who cannot devote his undivided attention to the work will require a longer period.

The candidate for the Doctor's degree must, upon entering the Graduate School, elect the group within which he intends to do the greater part of his work, and will then pass under the jurisdiction of the Committee in charge of that group. He must designate, with the consent of the Committee, three branches of learning in which he desires to become proficient. One of these, known as his "major," or principal, subject, must lie within the group, although the Group Committee may direct him to courses given in other groups, and may allow them to be accounted part of the major work. The other two are termed his "minor," or subordinate, subjects. It is recommended that at least one minor be taken outside the group in which the major lies, but in every case the minor subjects shall be so related to the major as to conduce to some approved end. The work done for the completion of each minor subject must comprise not less than four standard courses or their equivalent.

Every candidate for the Doctor's degree must possess a good reading knowledge of those languages which are adjudged by the Committee in charge of the major to be essential to the prosecution of his major work, in addition to a knowledge of French and German as required by the rules.

He must also present a thesis upon some topic in the line of his major subject, showing high attainment and power of independent research. This thesis must be presented to, and approved by, the Group Committee in which his major lies.

The thesis, if accepted, must be printed, and 250 copies must be delivered to the Dean before the candidate is recommended to the Board of Trustees for the degree. Exceptions to this rule may be made by the Executive Committee, but in no case will an exception be made unless the student be able to guarantee to the satisfaction of the Committee that the thesis will be printed within a limited period. Under certain conditions, with the approval of the Group Committee, a printed abstract of the thesis may be accepted as fulfilling the requirement for publication.

The candidate for the Doctor's degree must present himself for written examinations conducted by his instructors. Examinations in a minor may be held at any time approved by the Group Committee in charge of that minor. The examinations in the major will not be held until the candidate has completed all the resident and lecture work required by the rules of the Graduate School and by the Group Committee in charge of the major; and no candidate will be admitted to these examinations who has not had one year of resident work in this University. But it is not required that the thesis be completed before the candidate is admitted to the final examinations in the major.

*The completion of the minimum requirements of twenty-four hours confers no right upon the student to be admitted to examination. His acceptance, after the completion of the minimum requirements, depends solely upon his natural abilities and stage of scholarly advancement.*

After his examinations have been passed, and the printed thesis has been delivered to the Dean, the candidate will be presented to the Faculty by a representative of the Group Committee in charge of his major work. The presenter will make a statement of the academic record of the candidate, and of the scope and value of his thesis, and will recommend him to the Faculty on behalf of the Group Committee in question for the Doctor's degree. The Dean will certify that the candidate has complied

with all the formal rules of the Faculty governing such cases. Any member of the Faculty will then be at liberty to ask of the candidate or of the presenter any questions he may desire. Upon this evidence the Faculty will then decide by vote whether the candidate shall or shall not be recommended to the Corporation for the degree.

#### FEES AND DEPOSITS

**TUITION FEES.**—The fee for a "standard course" (see p. 311) is \$12.50 for the year. The fee for a course may be computed by multiplying this amount by the number of hours indicated, or by the number of "standard courses" it represents in cases where this number is specially designated.

**LABORATORY FEES.**—In addition to the tuition fee, a laboratory fee of \$5.00 an hour a week per annum is made for each laboratory hour included in a course in the five laboratories of Chemistry, Physics, Geology and Mineralogy, Botany and Zoology, Psychology. But the laboratory fee for work taken in any one of the five laboratories in any one year may not exceed a maximum charge of \$20.00.

The total amount of tuition and laboratory fees paid by any student shall not exceed \$150.00.

Bills for tuition and laboratory fees are rendered semi-annually.

*All Fellows and Scholars are exempted from the payment of tuition fees, but must pay laboratory and graduation fees, and must make the usual deposits. Fellows for Research and Instructors in the University are exempt from the payment of all fees, with the exception of the graduation fee.*

**DEPOSITS.**—All students must make a deposit with the Bursar, when matriculating, to cover breakage and all charges against the student not otherwise provided for. For the laboratories of Chemistry and of Physics the deposit is \$20.00. For the laboratories of Geology and Mineralogy, Botany and Zoology, and Psychology, the deposit is \$10.00. If courses are taken in two or more laboratories, the maximum deposit will be \$20.00. Students not working in any laboratory will make a deposit of \$5.00. After deducting charges, the balance remaining will be repaid at the close of the academic year. Should the charges against any student be found in the course of the year to exceed one-half the amount of this deposit, he must make with the Bursar a second deposit sufficient to restore the deposit to its original amount. *Fellows for Research and Instructors in the University are not required to make deposits.*

The GRADUATION FEE is twenty-five dollars (\$25.00).

## FELLOWSHIPS AND SCHOLARSHIPS.

This University recognizes three general classes of Fellowships and Scholarships:

1. Fellowships for Research.
2. Fellowships.
3. Scholarships.

These include the Fellowships for Research, Fellowships and Scholarships on the **GEORGE LEIB HARRISON** Foundation; Fellowships on the **HECTOR TYNDALE**, the **JOHN FRIES FRAZER**, the **JOSEPH M. BENNETT**, the **FRANCIS SERGEANT PEPPER**, and the **Mrs. BLOOMFIELD MOORE** Foundations; and University Fellowships for Research, Fellowships, and Scholarships especially created, or permanently established, by the Corporation.

### GENERAL PROVISIONS.

*Eligibility.*—Men only are eligible to all Fellowships and Scholarships on the Harrison, Tyndale, and Frazer Foundations. Women only are eligible to the Fellowships upon the Bennett, Pepper, and Moore Foundations. Both men and women are eligible to all University Fellowships and Scholarships, and to all Fellowships and Scholarships established for a limited period of time, unless the contrary be specified by that act of the Trustees which created the Fellowship or Scholarship in question.

*Appointment.*—All appointments are made by the Board of Trustees. Under ordinary conditions the Board acts solely upon the recommendation of the Executive Committee of the Graduate School. Applications for Fellowships and Scholarships for a given academic year are considered on and after March 1 of the year preceding, those received after March 1 being given consideration if any vacancies still remain. Applications should be addressed to the Dean of the Graduate School.

### THE GEORGE LEIB HARRISON FOUNDATION.

Through the generosity of the Provost, a permanent fund of Five Hundred Thousand Dollars has been presented to the University. This fund is known as the **GEORGE LEIB HARRISON** Foundation. The income, by the terms of the Foundation, is applied to the establishment of Fellowships and Scholarships, to the enrichment of the Library, to the support of courses of lectures by men of scientific eminence and to such other purposes as may promote the cause of advanced scientific study and research.

Under the provisions of this Foundation, there have been instituted in the Graduate School eight Scholarships, nineteen Fellowships, and six Fellowships for Research.

#### FELLOWSHIPS FOR RESEARCH.

##### *Upon the George Leib Harrison Foundation.*

Five Fellowships-at-large for Research have been established.

The title subjects of the five Fellowships-at-large for Research are determined by the Corporation each year, upon the recommendation of the Executive Committee.

The candidate must hold a Ph. D. degree granted under conditions satisfactory to the Executive Committee of the Graduate School, and must submit plans for the prosecution of a line of research acceptable to that Committee. During his tenure of the Fellowship, the Fellow will be required to devote his entire time to his work. He may, further, give instruction in the Graduate School or in the College of this University, provided such instruction does not exceed four hours a week during any one year.

No individual can hold a Harrison Fellowship for Research for more than three academic years.

The holder of a Fellowship for Research upon the GEORGE LEIB HARRISON Foundation receives a stipend of \$800 per annum. He is allowed unrestricted use of all the facilities of the Graduate School, and of the Library, without payment of the usual fees, and without making the usual deposits. Men only are eligible.

##### *University Fellowships for Research.*

The Corporation will, from time to time, upon the recommendation of the Executive Committee create additional Fellowships for Research. The applicant for such a Fellowship will be required to submit plans for the prosecution of a definite and practicable line of research. He will be granted the unrestricted use of the facilities afforded by the Graduate School, and of the Library, without the payment of tuition or laboratory fees, and without making a deposit. As a rule he will not receive a stipend.

The University Fellowships for Research created for the current year will be found enumerated in the list of Fellows and Scholars.

#### FELLOWSHIPS

##### *Upon the George Leib Harrison Foundation.*

Nineteen Fellowships have been created upon the GEORGE LEIB HARRISON Foundation. The title subjects are determined from

year to year by the Board of Trustees upon the recommendation of the Executive Committee. The candidate for such a Fellowship is required to hold a baccalaureate degree, and to have had one year of graduate work, both of which must be satisfactory to the Executive Committee. He must possess a good reading knowledge of French and German.

During the tenure of his Fellowship the Fellow must devote his undivided time to the prosecution of his studies. No teaching or other outside work is permitted.

A stipend of \$500 per annum is attached to each of these Fellowships. Holders are exempt from the payment of tuition fees, but are required to pay laboratory and graduation fees.

No individual can hold a Harrison Fellowship for more than two years. Men only are eligible.

#### *The Harrison Fellowship Funds.*

To each one of the nineteen Fellowships upon the **GEORGE LEIB HARRISON** Foundation is attached the additional sum of \$100 per annum. This sum is expended upon the equipment of the Graduate School, with primary reference to the facilitation of the work of the Fellow. The manner in which each fund is to be expended is determined by the Provost, after consultation with the Dean and with the representatives of the Department in which the Fellow is to work.

#### *Upon the Hector Tyndale Foundation: In Physics.*

This Fellowship was endowed in 1885 by Professor John Tyndall. The candidate is required to hold a baccalaureate degree, and must intend to pursue advanced studies in Physics. The holder of the Fellowship may, with the sanction of the Faculty, pursue his studies at any university here or abroad. He receives a stipend of \$500 per annum. He is exempt from the payment of tuition fees, but is required to pay laboratory and graduation fees.

No individual can hold this Fellowship for more than three years. Men only are eligible.

#### *Upon the John Fries Fraser Foundation: In Physics.*

This Fellowship has been established in memory of John Fries Frazer, Professor of Natural Philosophy and Chemistry in this University, 1844-72, by his daughter, Mrs. Thomas K. Conrad, and others of his kinsfolk. The conditions of appointment and of tenure are the same as those of the Harrison Fellowships.

## FELLOWSHIPS FOR WOMEN.

*Upon the Joseph M. Bennett Foundation.*

The late Colonel Joseph M. Bennett endowed two Fellowships for the use of women. They are assigned to the various subjects of instruction, from year to year, by the Board of Trustees as are the Harrison Fellowships. The holder is required to possess a baccalaureate degree satisfactory to the Executive Committee, and to qualify as a candidate for the Doctorate. She is required to reside, during her tenure of the Fellowship, at the University of Pennsylvania. She receives a stipend of \$225 per annum, is exempt from the payment of tuition fees, but is required to pay laboratory and graduation fees.

No individual can hold one of these Fellowships for more than three years.

*Upon the Frances Sergeant Pepper Foundation.*

This Fellowship was endowed by the late William Pepper, M. D., Provost of the University, 1881-94. The conditions of appointment and of tenure are identical with those of the Bennett Fellowships.

*Upon the Mrs. Bloomfield Moore Foundation.*

Two Fellowships for the use of women were endowed by the late Mrs. Bloomfield Moore. The conditions of appointment and of tenure are identical with those of the Bennett and Pepper Fellowships, excepting that the candidate must intend to become a teacher. The stipend is \$200 per annum.

## UNIVERSITY FELLOWSHIPS.

The Corporation may, from time to time, upon the recommendation of the Executive Committee, create special University Fellowships for a year, or term of years, with or without a stipend, as the resolution creating the Fellowship may direct. Such Fellowships are usually created in consequence of a special endowment. Both men and women are eligible.

## SCHOLARSHIPS.

The Scholarships are assigned by the Board of Trustees annually to the various subjects of instruction.

A candidate for a Scholarship is required to hold a baccalaureate degree satisfactory to the Executive Committee. During the tenure of the Scholarship the holder is required to reside at the University of Pennsylvania, and to pursue to the satisfaction of his instructors

not less than eight standard courses in each academic year. He is exempt from the payment of tuition fees, but is required to pay laboratory and graduation fees. He may or may not receive a stipend.

*Upon the George Leib Harrison Foundation.*

Eight Scholarships have been created upon the **GEORGE LEIB HARRISON** Foundation. The holder is entitled to free tuition, and to a stipend of \$100 per annum; he is allowed to engage in outside work only upon receiving the written consent of the Dean. No individual is permitted to hold a Harrison Scholarship for more than one year. Men only are eligible.

*University Scholarships.*

Thirty Scholarships have been created by the Corporation. Holders are exempt from the payment of tuition fees, but receive no stipend. Both men and women are eligible.

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For blank forms of application for Fellowships and Scholarships, and for all further information concerning the Graduate School, address

**HERMAN V. AMES, Dean,**  
College Hall, University of Pennsylvania.

The Dean is in his office, 105 College Hall, daily, from 9 A. M.  
to 1 P. M.

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**SUMMER SCHOOL.**

The Summer School session will be held for the year 1909, from Tuesday, July 6, to Tuesday, August 17.

Graduate courses are offered in several departments, and students will receive credit for such work if they matriculate afterwards in the Graduate School.

A recent regulation of the Board of Trustees makes it possible for the degree of Master of Arts to be attained by work done exclusively in the Summer School, without any fixed limit to the number of years taken in earning the necessary credits. Credit may also be secured in part in the Summer School toward the degree of Doctor of Philosophy.

For descriptions of these courses and additional information in regard to work in the Summer School, students should consult the Summer School announcement, which can be obtained by addressing Dr. A. Duncan Yocom, Director of the Summer School, College Hall, University of Pennsylvania.

### COURSES OF INSTRUCTION.

The major subjects offered by each Group Committee represent those divisions of topics which are commonly recognized. Other divisions may be allowed in special cases.

Any arrangement of courses approved by the Group Committee offering them, may, with the consent of the Committee in charge of the major, be elected as a minor subject, provided it be equivalent to not less than four standard courses. But no student will be required to complete for a minor more than six standard courses.

Except where the contrary is stated, lecture or seminary courses of one hour or laboratory courses of two hours extending over a year, and lecture or seminary courses of two hours or laboratory courses of four hours extending over a term, are accounted standard courses.

The University reserves the right to make changes in the hours at which the courses are given, in the personnel of the teaching staff, and in the courses announced.

**ADMINISTRATION:** see *Economics*.

**AESTHETICS:** see *Philosophy and Psychology*.

**ANTHROPOLOGY:** see *Archaeology*.

**ARABIC:** see *Semitic Languages*.

**ARAMAIC:** see *Semitic Languages*

**ARCHITECTURE:** see *Fine Arts*.

**ARTS:** see *Fine Arts*.

### I. ARCHAEOLOGY AND ETHNOLOGY.

Professor HILPRECHT, *Chairman*;

Professors ROLFE and BATES, Assistant Professors McDANIEL and CLAY; Dr. GORDON, Dr. SPECK and Dr. SAPIR.

[For a full statement and description of the courses offered, see the special *Fasciculus of the Graduate School*.]

#### A. SEMITIC ARCHAEOLOGY.

Professor HILPRECHT.

Hours  
a week.

1. Babylonian Paleography and Assyrian Historical Grammar .....	2
2. Interpretations of the Collections of the Babylonian and General Semitic Museum. Every fortnight .....	1

## Assistant Professor CLAY.

Hours  
a week.

4. Hebrew Archaeology. First Term. Tu. 3.15 to 4.15 . . . . .	1
5. Lectures on the Cuneiform Inscriptions and the Old Testament. Second Term. Tu. 3.15 to 4.15 . . . . .	1

**B. CLASSICAL ARCHAEOLOGY.**

**NOTE.**—The University of Pennsylvania is a contributor to the support of the American Schools of Classical Studies at Athens and at Rome. Its graduates are therefore entitled to free tuition in these schools, and may also become candidates for the fellowships they offer each year.

**GREEK.**

## Professor BATES.

1. Greek Epigraphy. One Term. M. Tu. 3. Given in 1909-10 . . . . .	2
2. Pausanias. Two Terms. M. W. 3. Given in 1909-10 . . . . .	2
3. Professor Bates will direct properly qualified students in the investigation of special topics in classical archaeology. The material in the Mediterranean Section of the Free Museum of Science and Art is available for this purpose.	

**ROMAN.**

## Professor ROLFE.

1. Introduction to Latin Epigraphy and Paleography. Second Term. M. Tu. 4.15 . . . . .	2
2. Roman Topography. One Term. Omitted in 1908-09 . . . . .	2

## Assistant Professor McDANIEL.

3. Private Antiquities; advanced course. Omitted in 1908-09 . . . . .	2
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**C. ANTHROPOLOGY.**

## Dr. GORDON, Dr. SPECK and Dr. SAPIR.

1. General Anthropology. M. W. 2.15 . . . . .	2
2. Prehistoric Archaeology. First Term. M. W. 3 . . . . .	2
3. Ethnology of the Pacific. Second Term. Hours to be arranged . . . . .	2
4. Primitive arts and industries. Second Term. M. W. 4 . . . . .	2

	Hours a week.
5. Primitive religions. First Term. M. W. 4.....	2
6. American linguistics. Hours to be arranged.....	2
7. American Archaeology and Ethnology. Second Term. Tu. Th. 2.15.....	2
8. European Ethnology. Second Term. M. W. 3.....	2
9. Human Anatomy. First Term. M. W. 10-12.....	4
10. Somatology. Second Term. M. W. 10.....	2
11. Museum and Laboratory work, study of collections and Museum methods. Tu. Th. S. 9 to 12.....	9
12. Anthropological Seminar. Hour to be arranged .....	1

ASSYRIAN: see *Semitic Languages*.

## II. ASTRONOMY.

Professor C. L. DOOLITTLE, *Chairman*; Assistant Professor E. DOOLITTLE.

[For a full statement and description of the courses offered, see the special Fasciculus of the Graduate School.]

1. Method of Least Squares, historically and practically considered. First Term. Tu. Th. 8.15 P. M..... 2
2. Reduction of Stellar Coördinates to a Homogeneous System. Investigation of the constants of precession, nutation and aberration, and the variations of terrestrial latitude. First Term. Omitted in 1908-09..... 2
3. History of Astronomy. Second Term. M. S. 9.15..... 2  
Lectures accompanied by reading and seminary work.
4. Practical Astronomy. Second Term. M. S. 10.15..... 2  
Spherical coördinates, parallax, refraction, time, latitude, longitude, azimuth, occultations, eclipses, precession, nutation, aberration, stellar proper motion, theory of astronomical instruments. Observatory practice.  
This course is based upon Doolittle, *Practical Astronomy*, and Chauvenet, *Spherical and Practical Astronomy*.
10. Observatory Practice. Six hours. Unit course.

Assistant Professor E. DOOLITTLE.

5. Theoretical Astronomy (a) .....
6. Theoretical Astronomy (b)..... 3

	Hours a week
7. Astronomical Seminary. F. 9.....	1
Investigation of special problems.	
8. Secular Perturbations. M. 11-1, W. 11-12 .....	3
9. Celestial Mechanics. S. 10.....	1

NOTE.—The observatory, equipped with an 18-inch equatorial telescope, and other instruments of the latest and most approved design, offers every facility by which students may familiarize themselves with the practical details of astronomical work. For detailed description see Part III of the catalogue.

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### III. BOTANY AND ZOOLOGY.

Professor MONTGOMERY, *Chairman*; Professors MACFARLANE and DONALDSON; Assistant Professors HARSHBERGER, MOORE and CALVERT; Dr. KRAUTTER, Dr. LILLIE.

Majors—Botany: Morphology and Physiology; Taxonomy and Distribution.

Zoölogy: Comparative Anatomy and Comparative Embryology.

[For a full statement and description of the courses offered, see the special *Fasciculus of the Graduate School*.]

#### A. BOTANY.

Professor MACFARLANE.

- 73. Plant Irritability. One hour lecture, two hours laboratory work. F. 2.15-5. Two courses. Omitted in 1908-09.
- 74. Comparative Taxonomy of Angiosperms. One hour lecture, two hours laboratory work. W. 2.15-5. Two courses.\* Omitted in 1908-09.
- 79. Comparative Morphology of the Angiospermia. Two hours lecture, four hours laboratory and seminary work. W. F. 2.15-5. Four courses.

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\* Additional hours will be arranged to meet the convenience of instructors and students.

## Assistant Professor HARSHBERGER.

- 77. Comparative Morphology and Taxonomy of the Myxomycetes and Fungi. One hour lecture, two hours laboratory and seminary work. Two courses. Omitted in 1908-09.
- 78. Comparative Morphology and Taxonomy of the Algae, Hepaticae and Musci. One hour lecture, two hours laboratory work. Th. 2.15-5. Two courses. Omitted in 1908-09.
- 81. Comparative Plant Distribution. One hour lecture, two hours laboratory work. Tu. 2.15-5. Two courses.
- 88. Comparative Study of Food Plants and their Products. One hour lecture, two hours laboratory work. Two courses.

## Dr. KRAUTTER.

- 75. Plant Nutrition. One hour lecture, two hours laboratory work. Two courses. Omitted in 1908-09.
- 76. Comparative Morphology of the Pteridophyta and Gymnospermia. Two hours lecture, four hours laboratory and seminary work. Four courses. Omitted in 1908-09.
- 80. Forest Botany. One hour lecture, two hours laboratory work. W. 10.15-1. Two courses.
- 87. Comparative Study of Plant Cell Contents. One hour lecture, two hours laboratory work. M. 2.15-5. Two courses.

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## GRADUATE BOTANICAL CLUB.

The instructors and advanced students in Botany meet on alternate Monday evenings, from 7.30 to 9.30 to present original communications, review recent papers, and discuss the general principles of plant evolution.

**NOTE.**—Students taking a major in Botany will be required, before presenting themselves for the Doctor's degree, to study for not less than ten consecutive months in the Botanic Garden of the University or of some other institution possessing equal facilities for practical work in Botany.

The Botanical Department is well equipped with specimens, models, charts, microscopes, microtomes, and other instruments of precision. The photographic and developing rooms are furnished with photo-micrographic, enlarging and reducing apparatus. A large collection of alcoholic

specimens is constantly being added to. The herbarium includes collections made by I. Burk, Leidy, Rothrock, Gray, Aubrey-Smith, Brinton, Wolle, J. D. Lowe and other well-known botanists. A varied series of museum preparations and dissections preserved in alcohol has been collected and is constantly being enlarged. The departmental library contains most of the memoirs, journals and text-books bearing on the subject.

The ground surrounding Biological Hall covers nearly five acres and has been laid out as a botanic garden. It contains about three thousand species of native and exotic plants. Twelve greenhouses and an experimental plant house surround and are in direct communication with the Hall. The plant houses contain an exceptionally rich and representative collection of species from all parts of the world, while the experimental plant house has been extensively utilized during the past fourteen years for physiological and morphological studies by workers in the department.

#### B. ZOOLOGY.

##### Assistant Professor MOORE.

687. Recent and Fossil Vertebrata. Two hours lecture, two hours laboratory or seminary work. Mondays, at 9, other hours to be arranged. Three courses. Omitted in 1908-09.  
688. Comparative Embryology of the Vertebrata. One hour lecture, five hours laboratory or seminary work. Four courses. Omitted in 1908-09.

##### Professor MONTGOMERY.

689a. Comparative Anatomy and Embryology of the Invertebrates. One hour lecture, five hours laboratory or seminary work. Four courses.

##### Professor MONTGOMERY.

690. Cytology. One hour lecture, five hours laboratory or seminary work. Th. 9-12, 2-5. Four courses. Omitted in 1908-09.

##### Assistant Professor CALVERT.

691. Entomology. One hour lecture, two hours laboratory or seminary work. W. 2-5, or by agreement. Two courses.

## Dr. LILLIE.

685. General Physiology. Two hours lecture, four hours laboratory work. Tu. Th. 2-5. Three courses.

695. The Dynamics of Living Matter. Two hours lecture. M. F. 3. Two courses.

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692. Animal Behavior. Two hours lecture. Two courses. Omitted in 1908-09.

693. The Protozoa. One hour lecture, two hours laboratory or seminary work. Tu. 9-12. Two courses. Omitted in 1908-09.

## Professor DONALDSON.

696. Comparative Neurology; research work only. Subject: The Growth of the Nervous System.

Professor MONTGOMERY; Assistant Professors MOORE and CALVERT; Dr. LILLIE.

Zoological Seminary. F. 4.

An organization of the instructors and advanced students for the presentation of original papers, the discussion of assigned topics, and reports upon current biological literature.

**BROKERAGE:** see *Economics*.

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**IV. CHEMISTRY.**

Professor EDGAR F. SMITH, *Chairman*; Assistant Professors SHINN and TAGGART; Dr. McCUTCHEON and Dr. HILDEBRAND.

Majors—Inorganic Chemistry; Organic Chemistry; Electro-chemistry.

Minors—1. Courses 1 and 8, with laboratory work, six hours.

2. Courses 3 and 5, with laboratory work, six hours.

[For a full statement and description of the courses offered, see the special *Fasciculus of the Graduate School*.]

## Professor EDGAR F. SMITH.

Hours  
a week.

1. Advanced Inorganic Chemistry. Tu. 10.15-12.15.....	2
2. Electro-chemistry. Th. 10.15.....	1
3a. Mineral Analysis. First Term. M. 12.15.....	1
3b. Determination of Atomic Weights. Second Term. M. 12.15.....	1
4. Seminar. Tu. 12.15.....	1
10. History of Chemistry in America. Second Term. W. 10.15.....	1

## Assistant Professor SHINN.

5. Industrial Chemistry. Th. 11.15.....	1
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## Assistant Professor TAGGART.

7. Organic Chemistry. M. 10.15-F. 9.15.....	2
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## Dr. HILDEBRAND.

6. Analytical Chemistry. W. 11.15.....	1
8. Physical Chemistry. M. 9.15.....	1

## Dr. McCUTCHEON.

9. History of Chemistry. First Term. W. 9.15.....	1
9a. Theories of Chemistry. Second Term. W. 9.15.....	1

The above schedule comprises mainly lecture courses. Much practical work is given in connection with all but Courses 4, 9, 9a and 10. This is carried on in the John Harrison Laboratory of Chemistry, which is thoroughly equipped for graduate study. After the student has received that training in the several departments of Chemistry which will give him a broad outlook in the science, and has displayed evidence of ability to follow research under guidance, he may be permitted to undertake investigation in his major subject (or in a minor topic if approved by the chairman of the Group Committee). Special research rooms are set apart for advanced students. They have also for use all modern apparatus necessary for the application of physico-chemical methods, for gas analysis, and for spectroscopy. The opportunities offered for thorough drill in practical electro-chemistry are had in laboratories especially arranged for this branch of chemical science. The rarer elements receive more than ordinary attention.

## V. CLASSICAL LANGUAGES.

Professor LAMBERTON, *Chairman*; Professors ROLFE and BATES; Assistant Professor McDANIEL; Dr. KENT, Dr. C. D. LAMBERTON.

Majors—Greek; Latin.

Minors—Greek; Latin; Classical Archaeology; Classical Philology.

The authors and works read in the group vary from year to year in such wise as to enable each student taking the work as a major to cover the principal periods and spheres of the literature.

NOTE.—The University of Pennsylvania is a contributor to the support of the American Schools of Classical Studies at Athens and at Rome. Its graduates are therefore entitled to free tuition in those schools, and may also become candidates for the fellowships they offer each year.

## A. GREEK.

Professor LAMBERTON.

Hours  
a week

1. Demosthenes. <i>De Falsa Legatione</i> . M. 5.15, Th. 5.....	2
2. Sophocles. <i>Oedipus at Colonus</i> . Tu. 5.15, F. 5.....	2
A philological and historical study.	

Similar courses of two hours a week each will be given in succeeding years in the following authors: Aristotle; Sophocles; Demosthenes; Thucydides; Aeschylus; Euripides.

Professor BATES.

4. The <i>Poetics</i> of Aristotle; Longinus, <i>De Sublimitate</i> . M. W. 3. First Term.....	2
10. The Greek Lyric Poets. Second Term. M. W. 3.....	2
9. Euripides. M. W. 3.....	2

The Greek drama as represented by Euripides. Lectures and special studies. All the extant plays will be read and fragments of lost plays studied.

For courses in Pausanias and in Greek Epigraphy, see Group I, B 1 and 2.

Dr. KENT.

5. Greek Comedy. Omitted in 1908-09.....	2
Old, middle and new, and its relations with Roman comedy. Reading of selected plays of Aristophanes.	

Hours  
a week.

6. Greek Historians. One Term. Omitted in 1908-09.....	2
7. Greek Phonology and Morphology. One Term. Omitted in 1908-09.....	2
11. Historical Greek Syntax. First Term. Omitted in 1908-09.....	2
8. The Greek Dialects. One Term. Omitted in 1908-09....	2

**B. LATIN.**

The following courses are intended to cover a period of three years. The order in which they are offered depends on the needs of the students in attendance each year.

**I. LATIN LITERATURE:**

**NOTE.**—The following courses may be repeated in successive years, with a change in the works read.

**Professor ROLFE.**

1. The Historians. Second Term. M. W. 2.15.....	2
2. The Writers on Mythology. Omitted in 1908-09.....	2

**Assistant Professor McDANIEL.**

3. Comedy. One Term. Omitted in 1908-09.....	3
4. The Literature of Christianity. M. 7.30-9.30.....	2
5. The History of Latin Literature. Omitted in 1908-09....	2

Lectures and reading of representative writers.

**Dr. KENT.**

6. Tragedy. One Term. Omitted in 1908-09.....	3
7. Epic Poetry. One Term. Omitted in 1908-09.....	3

**II. LATIN WRITING:**

Professor ROLFE and Assistant Professor McDANIEL.

8. Introductory course. One Term. Omitted in 1908-09.	2
9. Advanced Course. Omitted in 1908-09.....	1

**III. CLASSICAL PHILOLOGY:**

Professor ROLFE.

10. The History and Problems of Classical Philology. First Term M. Tu. 4.15.....	2
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	Hours a week
11. Introduction to Latin Epigraphy and Palaeography. Second Term. M. Tu. 4.15.....	2
12. Roman Topography. One Term. Omitted in 1908-09....	2
13. Colloquial Latin. One Term. Omitted in 1908-09.....	2
14. Miscellaneous Problems. S. 10.15.....	1

## Assistant Professor McDANIEL.

15. Private Antiquities. Omitted in 1908-09 .....	2
Lectures on the Life and Art of the Romans, illustrated by the stereopticon.	
16. Roman Ethical Theories and Practice. Omitted in 1908-09 .....	2
17. Miscellaneous Problems. S. 11.15.....	2

## Dr. KENT.

18. Latin Phonology and Morphology. First Term. W. 7.30-9.30 P. M.....	2
19. Historical Latin Syntax. One Term. Omitted in 1908-09.....	2
20. The Italic Dialects. Second Term. W. 7.30-9.30 P. M.....	2

## Dr. C. D. LAMBERTON.

21. Christian Archaeology. S. 12.15.....	1
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## PRO-SEMINARY.

## Assistant Professor McDANIEL.

22. Introduction to the methods of textual and exegetical criticism (a special study of Catullus, Martial, or Tacitus). Practice in using the philological periodicals and the books of reference that are of most importance to the teacher of Latin, as well as the dissertations and works that especially deal with the author chosen as the basis of the year's work. Tu. 7.30-9.30 P. M. and a third hour Sat. A. M.....	3
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## SEMINARY.

## Professor ROLFE.

23. Training in Criticism and Research (Roman Satire—Horace). Presentation of papers. Tu. 7.30-9.30 P. M. and a third hour Sat. A. M.....	3
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**C. CLASSICAL ARCHAEOLOGY.**

For courses which may be taken under this heading, see Archaeology and Ethnology, B.

**D. CLASSICAL PHILOLOGY.**

Students making this a separate subject may take Greek 7, 8, 11; Latin 10, 13, 18, 19, 20, 22, 23.

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**COMMERCE:** see *Economics*.

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**VI. ECONOMICS, POLITICS AND SOCIOLOGY.**

Professor PATTEN, *Chairman*; Professors JOHNSON, ROWE, JAMES T. YOUNG, MEADE, KELSEY; Assistant Professors J. R. SMITH, HUEBNER, MUSSEY and TOWER; Dr. JONES, Dr. MITCHELL.

Majors—Political Science; Economics; Transportation and Commerce; Sociology; Finance; Economic Geography and Industry.

[For a full statement and description of the courses offered, see the special Fasciculus of the Graduate School.]

**A. POLITICAL SCIENCE, PUBLIC FINANCE AND ADMINISTRATION.**

Professor ROWE.

1. Municipal Government and Institutions. M. W. 10.15..	2
2. International Law. S. 11-1.....	2
3. The Individual and the State. Omitted in 1908-09.....	2
4. Constitutional Government and Constitutional Guarantees in the Republics of Latin-America. Second Term.....	2

Professor YOUNG.

5. The Government of Colonies and Dependencies. Tu. Th. 10.....	2
6. The Political Institutions of the Manufacturing State. Omitted in 1908-09.....	2

Dr. JONES.	Hours a week.
7. European Colonial Systems.....	2
8. Comparative Governments. Omitted in 1908-09.....	2
9. Readings in Political Science.....	2

**B. ECONOMICS.**

Professors PATTEN and MEADE; Assistant Professors HUEBNER and MUSSEY; Dr. MITCHELL.

1. History of Political Economy. First Term. Tu. Th. 5..	2
2. Recent Development of Political Economy. Second Term. Tu. Th. 5.....	2
3. The Development of English Civilization. Tu. Th. 2.15....	2
4. Heredity and Social Progress. Omitted in 1908-09.....	2
5. Prosperity and Social Distress. Omitted in 1908-09.....	2
A study of current industrial conditions and the theories they have created.	
6. Theory of Social Forces. Omitted in 1908-09.....	2
7. The New Basis of Civilization. Second Term. Tu. Th. 2.15.....	2
A discussion of the physical and economic basis of social progress and of the effects of recent changes in industry and population.	
8. Economic Conference. W. 8 P. M.....	2
Topic: Recent Changes in Economic Theory. Open to students having taken Courses 1 and 3.	

Assistant Professor MUSSEY.

9. Economic Readings. M. 2-4.....	2
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Professor MEADE.

10. Corporation Finance.....	2
11. Investments. W. Th. F. 12.....	3

Assistant Professor HUEBNER.

12. Brokerage. M. 4-6.....	2
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Dr. MITCHELL.

13. Accounting and Business Organization. S. 11-1.....	2
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## C. SOCIOLOGY.

Hours  
a week.

Professor KELSEY and Assistant Professor MUSSEY.

1. Theory of Sociology. Two years. Dr. Mussey will give the first year on Saturdays, 11 to 1. Dr. Kelsey will give the second year's work on Mondays, 4 to 6.  
A systematic course covering two years. In four main divisions.
  - (a) The Biological Basis of Human Society.
  - (b) Primitive Society.
  - (c) Modern Social Institutions.
  - (d) Social Theory.
2. Social Debtor Classes. Omitted in 1908-09..... 2
3. American Race Problems. S. 9..... 2  
A study of the problems caused by immigration. The Indian, the Negro, with some attention to criminology.
4. Sociological Field Work..... 2

## Assistant Professor MUSSEY.

5. Standards of Living. Tu. Th. 3.15..... 2  
A study of conditions and cost of living, especially among workingmen.
6. Social and Vital Statistics. Omitted in 1908-09..... 2

## D. TRANSPORTATION AND COMMERCE.

## Professor JOHNSON.

1. Railway Transportation. First Term. Tu. 4, W. 3.15... 2
2. Ocean and Inland Water Transportation. Second Term. Omitted in 1908-09..... 2
3. Railway Rates and Traffic. M. W. 11.15..... 2
4. History of American Commerce. Second Term. Tu. 4.15, W. 3.15..... 2

## E. ECONOMIC GEOGRAPHY AND INDUSTRY.

## Assistant Professors J. R. SMITH and TOWER.

1. Readings in Economic Geography. W. 4. Alternates with Course 3..... 1
2. Geographic Seminary. W. 5..... 1

Assistant Professor J. R. SMITH.	Hours a week.
3. Industry. W. 4. Alternates with Course 1.....	1
4. International Trade. Omitted in 1908-09. Alternates with Course 5 .....	2
5. Economic Conditions in South America. Tu. Th. 9. Alternates with Course 4.....	2
6. Field Work in Industry. S. 9-11.....	2
7. Industrial Management. Tu. Th. 10.....	2

## Assistant Professor TOWER.

8. Climate and Civilization.....	2
9. Studies in Regional Geography. M. 4.....	2

## F. SEMINARY.

## 1. Seminary in Political Science, Economics and Sociology.

The seminary meets monthly and also upon call of the Chairman for the discussion by the faculty and fellows in Group VI of important political and social topics of general interest. Attendance upon the seminary is required by all students having a major or minor in any subject in this group.

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**EDUCATION:** see *Pedagogy*.

**EGYPTIAN:** see *Semitic Languages*.

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## VII. ENGLISH.

Professor SCHELLING, *Chairman*; Professors EASTON,  
PENNIMAN, CHILD, QUINN and WEYGANDT.

Majors—English Literature; English Philology.

[For a full statement and description of the courses offered, see the special *Fasciculus of the Graduate School*.]

## A. ENGLISH LITERATURE.

Professor SCHELLING.

1. The Elizabethan Lyric. First Term. Omitted in 1908-09.....	3
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Hours  
a week.

2. Poetry of the Seventeenth Century. Second Term. Omitted in 1908-09.....	3
3. English Drama from the Beginnings to the Death of Shakespeare. First Term. S. 9.15-11.15.....	2
4. English Drama from Shakespeare to Dryden. Second Term. S. 9.15-11.15.....	2
5. Shakespeare. Readings and Comment. W. 3.15-5.15... 2	2

## Professor PENNIMAN.

6. The Romantic Movement in English Literature. Omitted in 1908-09.....	2
7. English Literary Criticism. Second Term. W. 3.15-5.15. 2	2

## Professor CHILD.

8. Old English Literature to the Reign of Aelfred. Omitted in 1908-09.....	2
9. Old English Literature from Aelfred to the Norman Con- quest. Omitted in 1908-09.....	2
10. Middle English Literature from the Conquest to 1250. Omitted in 1908-09.....	2
11. Middle English Literature from 1250 to 1400. Omitted in 1908-09.....	2
12. Chaucer. First Term. F. 3.15-5.15.....	2
13. The Literature of the Fifteenth Century. Second Term. F. 3.15-5.15.....	2

## Professor QUINN.

14. Theory and History of English Versification. Second Term. S. 11.15-1.15.....	2
15. Literary History of America. Second Term. Omitted in 1908-09.....	2

## Professor WEYGANDT.

16. The Development of English Poetry from 1850 to the Present Day. First Term. S. 11.15-1.15.....	2
17. The Development of the English Drama from 1850 to the Present Day. First Term. Omitted in 1908-09.....	2

COURSES IN METHOD.		Hours a week.
18. Bibliography and Method.	Omitted in 1908-09.....	1
19. Current Criticism.	Omitted in 1908-09.	

These courses are required of all students taking work in English Literature either as a major or minor.

NOTE.—All these courses may involve the preparation and discussion of papers embodying original work within the range of the general subject. A course in English Philology, equivalent to a minor, will be required of all who take English Literature as a major. Some work in English History may also be demanded of students taking major or minor courses in English Literature.

### B. ENGLISH PHILOLOGY.

Professor EASTON.

1. English Philology; elementary.	M. Tu. 4.15.....	2
	Mainly Anglo-Saxon grammar and texts.	
2. English Philology; advanced.	M. Tu. 5.15.....	2
	Mainly Middle English texts.	
3. Elizabethan English.	One Term. Th. 5.15.....	1

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**ETHICS:** see *Philosophy*.

**ETHIOPIC:** see *Semitic Languages*.

**ETHNOLOGY:** see *Archaeology*.

**FINANCE:** see *Economics*.

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### VIII. FINE ARTS.

Professor EVERETT, *Chairman*; Professor CRET; Assistant Professors DAWSON and OSBORNE.

Majors—History of Architecture; History of Painting.

[For a full statement and description of the courses offered, see the special *Fasciculus of the Graduate School*.]

#### LABORATORY COURSES.

Assistant Professor DAWSON and Assistants.

1. Theory of Drawing.....	4
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## LECTURE COURSES.

Hours  
a week.

These courses are to precede the research courses. They are illustrated with lantern slides and photographs.

## Professor CRET.

2. The Philosophy of Architecture..... 1

## Professor EVERETT.

3. History of Italian Painting. Two lecture hours and one hour for research..... 3  
 4. History of Italian Sculpture. Two lecture hours and one for research..... 3

## Assistant Professor OSBORNE.

5. History of Architecture. Two lecture hours and one for research..... 3

This course deals with the essential outlines of the subject, leaving discussion of details to the research course.

## RESEARCH COURSES.

## Professor CRET.

6. Analysis of Style..... 1

## Professor EVERETT.

The research courses in painting and sculpture will deal principally with questions connected with the origins of masters and schools and with the authorship and chronology of works of art. Drawings by the great masters will receive special attention. Subjects for original investigation will be assigned in the art collections of Philadelphia, New York, Boston, and New Haven.

Each course will occupy two hours a week for one term.

7. Florentine Painters of the Fourteenth and Fifteenth Centuries..... 2  
 8. Florentine Painters of the Sixteenth Century..... 2  
 9. Central Italian Painters..... 2  
 10. North Italian Painters of the Fourteenth and Fifteenth Centuries..... 2  
 11. North Italian Painters of the Sixteenth Century..... 2  
 12. Italian Sculpture of the Fourteenth and Fifteenth Centuries..... 2  
 13. Italian Sculpture of the Sixteenth and Seventeenth Centuries..... 2

## Assistant Professor OSBORNE.

In the broad field covered by the courses in historic architecture research work may be prosecuted by the student in any portion of that field for which he is especially qualified, by preparation and predilection. The following courses are suggested as typical. Each would occupy two hours a week for one term:

Mycenaean influence in Egypt as shown in the architecture of the XII<sup>th</sup> and XVIII<sup>th</sup> Dynasties.

Development of the arch and vault in the valley of the Euphrates.

Architecture of the Hellenistic age, and its influence on Byzantine architecture.

Byzantine influence in Western Europe during the Romanesque and early Gothic periods.

Refinements in architecture during the Medieval period.

Mongolian influence in the formative period of Hungarian Architecture.

The origins of Scandinavian Architecture.

The historical significance of the architecture of the quattro-cento.

Colonial types in America.

The constructive elements of architecture considered with reference to their historical development.

NOTE.—See also Psychology, Course 10, Aæsthetics, Philosophy, Course 26, History of Aæsthetics and Archaeology, Course 2, Pausaneæ.

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FRENCH: see *Romanic Languages*.

GEOGRAPHY: see *Economics*.

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## IX. GEOLOGY AND MINERALOGY.

Professor A. P. BROWN, *Chairman*; Assistant Professor EHRENFELD; DR. TRAVIS.

Majors—Geology; Mineralogy.

[For a full statement and description of the courses offered, see the special Fasciculus of the Graduate School.]

**A. GEOLOGY.****Professor A. P. BROWN.**

1. Historical Geology. One hour lecture, four hours laboratory. Tu. 9.15. Three courses.

**Dr. TRAVIS.**

2. Petrography. One hour lecture, four hours laboratory. Th. 9.15. Three courses.

**Assistant Professor EHRENFELD.**

3. Physical Geology and Physiography. Two hours lecture, two hours laboratory. Tu. Th. 11.15. Three courses.

**Professor A. P. BROWN.**

4. Chemical Geology. One hour lecture, four hours laboratory. One Term. W. 11.15. Two courses.
5. Paleontology of the Invertebrata. Laboratory, five hours, Two and a half courses.

**B. MINERALOGY.****Dr. TRAVIS.**

1. Mathematical and Physical Crystallography. Two hours lecture, four hours laboratory. M. Tu. 2.15. Four courses.
4. Determination of Minerals by Physical and Pyrognostic Properties. Four hours laboratory. Th. 10.15-1.15, 2.15-3.15. Two courses.

**Assistant Professor EHRENFELD.**

3. Chemical and Synthetic Mineralogy. One hour lecture, three hours laboratory. One Term. Tu. 2.15. Three courses.

**Professor A. P. BROWN.**

2. Systematic Mineralogy. Two hours lecture, two hours laboratory. Tu. Th. 10.15. Three courses.

The laboratory hours are the minimum required for minor work. Students taking Geology or Mineralogy as a major spend more time in laboratory work than noted above.

All students in Mineralogy and Geology are expected to participate in the occasional field excursions, in addition to such field work as may be assigned to students taking major work in this group.

In the laboratory courses, the study from specimens is carried on in the mineralogical and geological museums. Other practical work is done in the mineralogical laboratory, which is supplied with instruments and appliances for advanced work in the subjects embraced in this group. Power machines are provided for slicing and grinding minerals and rocks; the chemical laboratory is equipped for the qualitative and quantitative examination of minerals; the goniometer room is provided with apparatus for work in mathematical and physical crystallography; the dark-room is arranged for photographic work, including photomicrography. In the Library will be found the works and journals on Geology and Mineralogy most frequently consulted by the student; while, in addition, the Museum is supplied with those works of reference necessary for the courses in practical Paleontology and Mineralogy.

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## X. GERMANIC LANGUAGES.

Professor LEARNED, *Chairman*; Professor SHUMWAY;  
Dr. DAVIS, Dr. RIETHMÜLLER, Dr. FOGEL.

The graduate courses in Germanic Philology are grouped in cycles of three years, in order to enable the student to pursue his studies in all the representative periods of Germanic Languages and Literature—Gothic, Old High German, Middle High German, New High German (including the sixteenth, seventeenth, eighteenth and nineteenth centuries). During the cycle of three years, at least one seminary course will be offered in each of the more important periods.

[For a full statement and description of the courses offered, see the special *Fasciculus of the Graduate School*.]

## Professor LEARNED.

Hours  
a week.

1. Germanic Seminary. W. 4-6..... 2

Courses given in 1910-11.

(a) Early German Drama. First Term.  
 (b) German Drama of the Eighteenth Century. Second Term.

Courses given in 1908-09.

Alternating with the early German Epic.

(a) Early German Ballad. First Term.  
 (b) Minnesong. Second Term.

Courses given in 1909-10.

(a) Early German Prose Novel. First Term.  
 (b) The German Novel of the Eighteenth Century. Second Term.

2. History of German Literature. S. 1.15..... 1

Courses given in 1910-11.

(a) Old High German Period. First Term.  
 (b) Middle High German Period. Second Term.

Courses given in 1908-09.

Humanism, Reformation and Renaissance. Two Terms.

Courses given in 1909-10.

Early Eighteenth Century, Storm and Stress, Classicism and Romanticism. Two Terms.

3. Literary Relations of England and Germany. Omitted in 1908-09..... 1

4. German Influence on American Literature..... 1

5. Goethe's Lyrical Poems. Omitted in 1908-09..... 1

6. Old Norse. M. II..... 1

Course given in 1910-11.

Elementary. Two Terms.

Course given in 1908-09.

Prose Sagas. Two Terms.

Course given in 1909-10.

Poetic Edda. Two Terms.

## Professor SHUMWAY.

Courses given in 1910-11.

7. Middle High German; elementary. First Term. M. W. 3. 2

8. Nibelungenlied. Second Term. M. W. 3..... 2

9. German Philology; elementary. First Term. M. 4, W. 2. 2

	Hours a week.
10. Heliand. Second Term. Tu. 3, W. 2.....	2
Courses given in 1908-09.	
11. Middle High German; elementary. First Term. W. F. 2.15.....	2
12. Sixteenth Century. Second Term. W. F. 2.15.....	2
13. Old High German. Two Terms. W. F. 3.15 .....	2
Courses given in 1909-10.	
14. Middle High German; elementary. First Term.....	2
15. Seventeenth Century. Second Term.....	2
16. German Philology; advanced. Two Terms .....	1

## Dr. RIETHMÜLLER.

Courses given in 1910-11.

17. Modern German Prose Style. Two Terms. M. Tu. 5....	2
18. Contemporaneous German Literature. Two Terms. Th. F. 5.....	2
Courses given in 1908-09.	
19. Modern German Lyric Poetry. Two Terms. M. Tu. 5...	2
20. History of German Comedy. Two Terms. F. 4-6.....	2
Courses given in 1909-10.	
21. Modern German Drama. Two Terms.....	2
25. Schiller's Life and Works. Two Terms.....	2

## Dr. DAVIS.

22. Gothic. Two Terms. M. Th. 3.....	2
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## Dr. FOGEL.

26. German Folklore. Tu. 11.....	1
23. Journal Meeting W. 5.....	1
Held on the third Wednesday of each month at 8 p. m. Reports upon and discussions of the current literature relating to Germanics. All students with German as a major subject are expected to participate.	
24. The Germanic Association. The work of this association, of which the instructors and advanced graduate students are members, is an essential part of the work in German. An original paper is presented at each meeting. This may be followed by minor communications. Evening of the first Wednesday in each month.	

**NOTE.**—German Conversation. Students who elect German as a major, are required to join the class in German conversation, unless they already have a satisfactory command of colloquial German. Attendance upon courses 17, 18, 19, 20, 21, 25, will absolve the requirement in German conversation, so far as class work is concerned.

**GOTHIC:** see *Germanic Languages*.

**GREEK:** see *Classical Languages*.

**HEBREW:** see *Semitic Languages*.

## XI. HISTORY.

Professor McMaster, *Chairman*; Professors Chynby, H. V. Ames, and Lingelbach; Assistant Professor Howland; Dr. H. H. S. Aimes.

Majors—American History; American Constitutional History; Medieval History; Modern European History; English History.

[For a full statement and description of the courses offered, see the special *Fasciculus of the Graduate School*.]

### A. AMERICAN HISTORY.

#### SEMINARY COURSES.

Professor McMaster.	Hours a week
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1. Administrations of Fillmore and Pierce. Tu. F. 4-5.30	3
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Professor H. V. Ames.

6. The Constitutional History of the Colonies. Omitted in 1908-09.....	2
7. The Civil War. Omitted in 1908-09.....	2
8. The Reconstruction Period. Section I, Tu. 4, Section II, Th. 4.....	2

#### LECTURE COURSES.

Professor McMaster.

2. Our Social, Political and Industrial Development since 1783. Omitted in 1908-09.....	1
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	Hours a week.
3. The United States and Europe. W. F. 11.15. Omitted in 1908-09.....	2
4. The United States in the Nineteenth Century. M. W. 10.15.....	2

## Professor H. V. AMES.

9. The Constitutional History of the United States. Tu. Th. 12.15.....	2
10. The Slavery Contest in the United States. Second Term. Omitted in 1908-09.....	2

## Dr. H. H. S. AMES.

11. Spain in America. M. 4.....	2
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**B. EUROPEAN HISTORY.**

The courses in European History are of three classes: methodological courses, involving the technical discussion of scientific methods of study; seminary courses, intended to give practical training in investigation; and lecture courses, the object of which is more especially to convey information in the subjects discussed.

## COURSES IN METHODOLOGY.

Primarily intended for students taking a major in European History.

Professors CHEYNEY and LINGELBACH; Assistant Professor HOWLAND.

1. Bibliography. M. 3.....	1
A study of general historical bibliographies, guide-books and periodicals, and of the special bibliography of Medieval, Modern, and English History.	

## Professor CHEYNEY.

2. Historical Analysis and Construction. Omitted in 1908-09.....	1
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## Assistant Professor HOWLAND.

3. Paleography and Diplomatics. M. 4.15.....	1
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**COURSES OF INSTRUCTION.**

347

**SEMINARY COURSES.**Hours  
a week.

Intended for students taking either a major or a minor  
in European History.

**Professor CHEYNEY.**

4. English Constitutional History from the Eleventh to the Fourteenth Century. Omitted in 1908-09 .....	2
5. English Social and Economic History, from the Thirteenth to the Sixteenth Century. Omitted in 1908-09.....	2
6. England in the Sixteenth and Seventeenth Centuries. S. 9.....	2

**Professor LINGELBACH.**

9. The Establishment of the First Republic in France, 1792. Omitted in 1908-09.....	2
10. The Relations between France and England during the years of the Continental System. W. 4.....	2

**Assistant Professor HOWLAND.**

13. The Carolingian Capitularies. Omitted in 1908-09.....	2
14. Feudalism in the Tenth Century. Omitted in 1908-09....	2
16. The Ecclesiastical States of Germany. Omitted in 1908-09.....	2

**LECTURE COURSES.**

Primarily intended for students taking a minor in European History.

**Professor CHEYNEY.**

7. English History, with especial attention to the constitutional aspect. M. W. 12.15 .....	2
17. Relations between England and the Continental Countries from the Fourteenth to the Sixteenth Century. Omitted in 1908-09.....	2
18. The British Empire from the Sixteenth to the Nineteenth Century. M. W. 2.15.....	2

**Professor LINGELBACH.**

19. Studies in the History of the Nineteenth Century. Omitted in 1908-09.....	2
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	Assistant Professor HOWLAND.	Hours a week.
8. Church History to the beginning of the Fifteenth Century. Tu. Th. 2.15.....	2	
20. Medieval Institutions. Tu. Th. 4.30.....	2	

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## XII. INDO-EUROPEAN PHILOLOGY.

Professor EASTON.

Major or Minor—Sanskrit and Indo-European Philology.

1. Elementary Sanskrit. First Year. Tu. Th. 10.15.....	2
2. Elementary Sanskrit. Second Year.....	2
3. Advanced Sanskrit. M. 3, Th. 4.....	2

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**INDUSTRY:** see *Economics*.

**ITALIAN:** see *Romanic Languages*.

**LATIN:** see *Classical Languages*.

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## XIII. MATHEMATICS.

Professor CRAWLEY, *Chairman*; Professor FISHER; Assistant Professors SCHWATT, HALLETT and SAFFORD; Dr. GLENN.

A student may elect a major and one or both minors in Mathematics. Students whose major is in Mathematics are, however, advised to elect one minor in Physics or Astronomy.

Students whose major is not in Mathematics, who elect one or two minors in Mathematics, will elect in consultation with the Chairman of the Group Committee such courses as are related most closely to the work of their major subject.

[For a full statement and description of the courses offered, see the special *Fasciculus of the Graduate School*.]

Professor CRAWLEY.

1. Modern Analytic Geometry. Tu. Th. 12.15.....	2
2. Solid Analytic Geometry. Omitted in 1908-09.....	2

The elementary portions of the subject, in particular the properties of surfaces of the second degree.

3. Higher Plane Curves. Omitted in 1908-09..... 3  
General theory of algebraic curves. Special applications to curves of the third and fourth degree.
4. Theory of Numbers. Omitted in 1908-09..... 3  
Linear congruences, law of quadratic reciprocity, analytic and geometric theories of forms, etc.

**Professor FISHER.**

5. Differential Equations. Tu. Th. 9.15..... 2  
Theory and applications of ordinary and partial differential equations containing real variables.
6. Advanced Calculus. Omitted in 1908-09..... 2  
Review of the fundamental principles with respect to their logical basis; selected topics, with applications; introduction to the theory of analytic functions.
7. Theory of Functions of a Complex Variable. First Term.  
Omitted in 1908-09..... 3  
The general theory, comparing the ideas of Cauchy, Weierstrass, and Riemann.
8. Elliptic Functions. First Term. Tu. 3.15, F. 4.15-6.15. 3  
The theories of Jacobi and Weierstrass; theta and modular functions; applications.
9. Linear Differential Equations. Second Term. Tu. 3.15, F. 4.15-6.15..... 3

**Assistant Professor SCHWATT.**

10. Theory of Functions of a Real Variable. Omitted in 1908-09..... 3
11. Infinite Series and Products. M. W. 1.15..... 2
12. Definite Integrals. Omitted in 1908-09..... 3

**Assistant Professor HALLETT.**

13. Introduction to Modern Higher Algebra. First Term.  
M. F. W. 2.15..... 3
14. The Galois Theory of Algebraic Equations. Second Term.  
M. W. F. 2.15..... 3
15. Theory of Groups of a Finite Order. M. W. F. 3.15..... 3

	Hours a week.
16. Linear Groups. Omitted in 1908-09.....	3
17. An introduction to the Lie theory of continuous groups, with applications to differential equations and to geometry. First Term. Omitted in 1908-09.....	3

## Assistant Professor SAFFORD.

18. Partial Differential Equations. W. 11.15, Th. 3.15-5.00.	3
19. Curvilinear coördinates, and isogonal transformations, with applications to the Theory of Potential.....	3
20. Mathematical Theory of Elasticity.....	2

NOTE.—One of these three courses will be given each year by arrangement between the instructor and students.

## Dr. GLENN.

21. Invariants and Covariants. Tu. Th. 3.15-4.45.....	3
22. Higher Algebraical Equations. Omitted in 1908-09.....	2

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**MINERALOGY:** see *Geology*.

**NORSE, OLD:** see *Germanic Languages*.

**PEDAGOGY:** see *Philosophy*.

**PHILOLOGY:** see the several languages.

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#### XIV. PHILOSOPHY, ETHICS, PSYCHOLOGY, AND PEDAGOGY.

Professor WITMER, *Chairman*; Professor NEWBOLD;  
Assistant Professors SINGER, YOCUM and TWITMYER;

Dr. FLACCUS, Dr. URBAN, Dr. HOLMES.

Majors—Philosophy; Psychology; Pedagogy.

[For a full statement and description of the courses offered, see the special *Fasciculus of the Graduate School*.]

##### A. PHILOSOPHY AND ETHICS.

The courses in Philosophy are given with special reference to the historical development of thought, and fall into two divisions, Introductory and Advanced. The Intro-

ductory courses are open both to undergraduate and to graduate students, and are designed to give a general survey of the periods or topics with which they deal. The Advanced courses are primarily designed for graduate students, and are based upon a detailed study of the texts.

## INTRODUCTORY COURSES.

	Professor NEWBOLD.	Hours a week.
1. History of Ancient Philosophy.	W. 3.15.....	2
	From Thales to the closing of the schools of Athens.	
10. Readings in Ancient Philosophy.	One Term. F. 3.15...	2
	Plutarch, Lucian and Philostratus.	

## Assistant Professor SINGER.

2. History of Modern Philosophy.	M. 7.30 P. M.....	2
	Courses 1 and 2 will deal especially with the development of Method.	
3. Philosophy of Nature.	M. W. 10.15.....	2
	Parallel to 1 and 2, but deals with the history of the natural sciences.	

## Dr. FLACCUS.

4. Analysis of Ethical Theories.	M. 3.....	2
	Based upon Sidgwick, <i>Methods of Ethics</i> .	

## ADVANCED COURSES.

## Professor NEWBOLD.

5. The Pre-Socratic Period.	Omitted in 1908-09.....	2
6. Plato's Metaphysic, Anthropology and Cosmology.		
Omitted in 1908-09.....		2
7. Aristotle's Metaphysic.	F. 8 P. M.....	2
Reading of the greater part of the book with commentary by the instructor.		
8. Aristotle's Psychology.	Omitted in 1908-09.....	2
9. History of Greek Ethical Theories, First Period.	Omitted in 1908-09.....	2
12. Philosophy and Religion in the Later Age.	Th. 3.....	2
Reading in English, with a running commentary, of the more important portions of Plotinus' <i>Enneads</i> . The development of Greek religious philosophy, before and		

Hours  
a week

after Plotinus, will also be sketched by the instructor in outline.

19. Aristotle's Logic. Omitted in 1908-09..... 2

**Assistant Professor SINGER.**

13. German Idealism. Seminary. Omitted in 1908-09..... 2

14. German Idealism. Seminary. Tu. 3..... 2

Selected works of Kant, Fichte and Hegel.

15. Modern Logic. W. 7.30..... 2

16. Development of Scientific Thought. F. 4. Omitted in 1908-09..... 2

**Dr. FLACCUS.**

11. History of Ethical Theory in England. Omitted in 1908-09..... 2

20. Problems of Ethics. F. 3..... 2

Various problems, technical and practical, such as the concept of the good, the nature of conscience, the varieties of moral judgment, the problems of moral education and regeneration are discussed.

22. The Ethics of Kant and Hegel. Omitted in 1908-09.... 2

23. Neo-Hegelian Ethics. Omitted in 1908-09..... 2

26. History of Ästhetics. One Term..... 2

An introduction to the subject. It aims to gather material which will permit (a) the statement of typical theories, (b) the discussion of their conflict and development and (c) the problem of their reduction.

**SEMINARY.**

18. Students taking Philosophy as a major are expected, and other students of Philosophy are invited, to meet every second week with the instructors for the purpose of presenting thesis materials, reviewing current literature, and discussing papers on topics of philosophic interest..... 2

**B. PSYCHOLOGY.**

Professor WITMER; Assistant Professor TWITMYER; Dr. URBAN, Dr. HOLMES.

1. Analytic Psychology. First Term. Tu. 2.15 or S. 10.15.  
One course..... 3

2. Physiological Psychology. Second Term. Tu. 2.15 or S. 10.15. One course.....	3
3. Genetic Psychology. M. 2.15 or S. 10.15. Double course ..	3
5. Modern Psychological Theory. Tu. 10. Double course .	2
6. Experimental Psychology—Laboratory and Seminary. Double course.....	3
The topics selected vary from year to year. In 1908-09 they include the following separate courses:	
(a) Sense-Perception, including general laboratory methods. One hour seminary and two or four hours laboratory.	
(b) Psycho-Physics. One hour seminary and two hours laboratory.	
(c) Psychometry. One hour seminary and two or four hours laboratory.	
7. Child Psychology. S. 9. Double course.....	2
8. Individual Laboratory Work. (Number of hours not assigned.) May be either laboratory experimentation, or such as may be made upon children in the schoolroom. For advanced students only, who have taken one or more courses in Experimental Psychology, and who are competent to carry on original research without instruction.	
9. General Seminary. Single course.....	1
For the report and discussion of the results of original research conducted in the laboratory and of current literature.	
10. Ästhetics. First Term. Single course.....	2

NOTE.—With permission of the Executive Committee of the Graduate School and of the Dean of the Medical School, courses in Psychiatry and Neuro-Pathology may be taken in the Medical School, either as a minor subject in this group or in partial fulfilment of the requirements for a minor or major in Psychology. (See also Anthropology 1 and 8, and Zoölogy 692)

### C. PEDAGOGY.

Assistant Professor YOCUM.

1. Institutes of Education. Omitted in 1908-09.....	2
2. History of Education. S. 2 .....	2

	Hours a week.
3. Educational Systems and Ideals. Three years.....	2
(a) Ancient Systems and Ideals. Omitted in 1908-09.	
(b) Modern Systems and Ideals. Omitted in 1908-09.	
(c) Recent and Contemporary Educational Thinkers. Omitted in 1908-09.	
This course can be taken only after Course 2.	
4. Educational Seminary. Th. 6 P. M.....	2
Except in special cases, only those that elect Pedagogy as a major subject will be admitted to this seminary.	
5. Educational Research. Two Years. F. 6 P. M.....	2

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#### XV. PHYSICS.

Professor GOODSPED, *Chairman*; Assistant Professors  
RICHARDS and HOUGH; Dr. HART, Dr. BARKER.

Major—Theoretical and Experimental Physics.

Minor—Work equivalent to six standard courses, one-third of which should be laboratory work.\*

[For a full statement and description of the courses offered, see the special *Fasciculus of the Graduate School*.]

NOTE.—The hours indicated are tentative only. The courses marked as omitted may be given if the needs of the students applying require it.

Professor GOODSPED.

7. Rigid Dynamics. Second Term. W. F. 5.....	2
9. Theory of the Potential Function. First Term. M. Th. 5.....	2
13. Analytic Statics. First Term. W. F. 5.....	2
14. Dynamics of a Particle. One Term. Omitted in 1908-09.....	2
18. Introduction to Mathematical Physics. One Term. Omitted in 1908-09.....	2
25. Theoretical and Practical Radiography. Laboratory. One course.....	3
26. Radiophysics. Second Term. M. Th. 5.....	2

\* Three hours of laboratory work per week for one year are equivalent to one standard course.

## Assistant Professor RICHARDS.

Hour,  
a week.

1. Constitution of Matter. First Term. Tu. 4, Th. 9, F. 10..	3
2. Radiation. Electromagnetic Theory of Light. Second Term. Tu. 4, Th. 9, F. 10 ..	3
4. Electricity and Magnetism.....	3
10. Theory of Sound. One Term. Omitted in 1908-09.....	2
11. Application of Harmonic Series to Physical Problems. M. 11, W. 10, F. 9.....	3
15. Geometrical Optics. One Term. Omitted in 1908-09.....	2
16. Optical Interference Methods and their Applications. One Term. Omitted in 1908-09.....	2

Professor GOODSPED and Assistant Professor RICHARDS.

3. Practical Spectroscopy, Laboratory. W. 2-5. One course.....	3
6. Absolute Physical Measurements. Laboratory. M. Th. F. 2-5. One to three courses.....	3 to 9
12. Seminary. Discussion of special subjects, and journal analysis. W. 4.....	1

## Assistant Professor HOUGH.

21. Theory of Alternating Currents. First Term. Tu. 5, F. 4..	2
22. Theory of Alternating Currents. Advanced Course. Second Term. Tu. 5, F. 4.....	2
23. Alternating Current Measurements. Laboratory. S. 9-1..	4
27. Theory of Electricity and Magnetism. Second Term.....	2
28. Theory of High Tension, High Frequency Currents. Tu. 11, Th. 5.....	2

## Dr. HART.

8. Thermodynamics. One Term.....	2
17. Kinetic Theory of Gases.....	1

## Dr. BARKER.

29. Thermoelectricity. One Term. Tu. 2, Th. 3.....	2
30. Hydrodynamics. One Term. Tu. 2, Th. 3.....	2

**POLITICAL SCIENCE:** see *Economics*.**PROVENCAL:** see *Romanic Languages*.**PSYCHOLOGY:** see *Philosophy*.

## XVI. ROMANIC LANGUAGES.

Professor RENNERT; Dr. CRAWFORD; Mr. VURPILLOT.

Majors—Old French and Provençal; Italian and Provençal; Italian and Spanish; Spanish and Portuguese.

[For a full statement and description of the courses offered, see the special Fasciculus of the Graduate School.]

## Professor RENNERT.

Hours  
a week.

1. Old French. Tu. 4.....	1
Kristian von Troyes, <i>Yvain</i> (ed. Foerster).	
2. Old Provençal. Tu. 3.....	1
Selections from Appel, <i>Provencalische Chrestomathie</i> .	
3. Early Italian. Tu. 2.....	1
The Sicilian Poets.	
4. Italian. M. 4.....	1
Ford, <i>The Romances of Chivalry in Italian Verse</i> (New York, Henry Holt & Co.)	
5. Old Spanish. M. 2.....	1
<i>Poema del Cid</i> .	
6. The Spanish Drama of the Seventeenth Century. M. 3....	1
Miguel Sanchez ( <i>el Divino</i> ); <i>La Guarda cuidadosa</i> ; <i>La Isla bárbara</i> , ed. Rennert.	
7. The History of Spanish Literature. Omitted in 1908–09..	1
<i>La Littérature espagnole</i> , par J. Fitzmaurice-Kelly, trad. de H. D. Davray (Paris, Armand Colin, 1904).	
8. Portuguese. Omitted in 1908–09.....	1
Foulché-Delbosc, <i>Abrégé de Grammaire portugaise</i> (Paris, 1894). Selection from Camões, <i>Os Lusiadas</i> .	
9. Catalan. Second Term.....	1
Selections from Ansias March.	

## Dr. CRAWFORD.

10. Introduction to Old French. Tu. 2.15.....	2
Old French Phonology and Morphology. Study of the Oldest Texts.	
11. Old French Epic Poetry.....	1
The Origins of the Old French Epic and its Development in Italy, Spain and England.	

For hours of courses, consult Instructor.

MR. VURPILLOT.

Hours  
a week.

12. French Lyric Poetry. Tu. Th. 11.15.....	2
13. History of French Literature and Ideas in the Eighteenth Century. M. W. 11.15.....	2

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**XVII. SEMITIC LANGUAGES.**

- Professor JASTROW, *Chairman*; Professor HILPRECHT; Assistant Professor CLAY.

Majors—Assyrian, Arabic, Ethiopic, Hebrew, Syriac, Aramaic.

Minors—Students electing a minor in the group must confine their work to one of these languages.

The courses offered every year in Semitic languages include grammar, interpretation of the different branches of literature, and paleography. Courses on the life, customs, religion and history of the Semitic nations will be given at stated intervals. (See also courses offered in Group I.)

[For a full statement and description of the courses offered, see the special *Fasciculus of the Graduate School*.]

**COMPARATIVE SEMITIC PHILOLOGY.**

Professor JASTROW.

- Introduction to the Study of the Semitic Languages. First Term. Th. 1.15. Omitted in 1908-09..... 1

**ASSYRIAN.**

Professor HILPRECHT; Assistant Professor CLAY.

- Assyrian Grammar. M. F. 2 ..... 2  
For beginners and students of Comparative Semitic Grammar. Exercises in reading cuneiform writing, and interpretation of easy historical texts. Delitzsch, *Assyrian Grammar*; and *Assyrische Lesestücke*.
- (a) Interpretation of Assyrian Historical and Babylonian Building Inscriptions. First Term. W. 10..... 2  
Rawlinson, *Cuneiform Inscriptions of Western Asia*, Vols. I, III, V.

Hours  
a week.

(b) Babylonian Letters and Religious Texts. Second Term. W. 10.....	2
Winkler's <i>Tell-Amarna Tablets</i> , and Rawlinson's <i>Cuneiform Inscriptions of Western Asia</i> , Vol. IV.	
4. Early and Neo-Babylonian Contract Tablets. W. 11.....	1
5. Interpretation of the Code of Hammurabi. Th. 4.....	1
Harper, <i>The Code of Hammurabi</i> .	
25. Administrative Documents from Temple Archives. Tu. 10.....	1
7. Assyrian Seminary. One Term. Th. F. 4. Cf. I. A. 1.....	2
Exercises in deciphering and copying original Babylonian documents, and in determining the age of cuneiform tablets. For advanced students only. Philological, archaeological and historical papers are required at stated intervals.	

### SUMERIAN.

Professor HILPRECHT.

8. Sumerian Grammar, and Interpretation of Bilingual Religious Texts. One Term.....	1
Hommel, <i>Sumerische Lesestücke</i> ; Weissbach, <i>Die Sumerische Frage</i> ; Rawlinson, <i>Cuneiform Inscriptions of Western Asia</i> , Vol. IV (2d ed.).	

### HEBREW.

Professor JASTROW.

6. Introduction to the Study of the Old Testament. Second Term. Tu. 3.30.....	1
23. Interpretation of the Book of Proverbs of the Old Testament. Tu. 2 .....	1
Critical study, with themes.	
9. Lectures on the Morphology of the Hebrew Language. Th. 3.30.....	1
20. The Hebrew Fragments of the Book of Ecclesiasticus. Omitted in 1908-09.....	1
21. Historical and Archaeological Study of the Pentateuchal Laws. Omitted in 1908-09.....	1

## Assistant Professor CLAY.

Hours  
a week.

10. Interpretation of Prophetical Books of the Old Testament. F. 9.....	I
11. Interpretation of Historical Books of the Old Testament, with a review of the Hebrew Grammar. Tu. 2.....	I
12. Introduction to the Old Testament. F. 2.....	I

These three courses (10, 11, and 12) are planned with especial reference to the interest of theological students and clergymen. The collections in the Archaeological Museum are used to illustrate the life of the people, and to furnish the material for the historical background of the periods treated.

## ARAMAIC.

## Professor JASTROW.

19. Elementary Aramaic. Omitted in 1908-09.....	I
All the Aramaic portions of the Old Testament will be read. Strack, <i>Abriss des Biblisch-Aramäischen</i> .	

## SYRIAC.

## Professor JASTROW.

22. Selected Readings from Syriac Texts. Omitted in 1908-09.	I
Brockelmann, <i>Syrische Grammatik</i> .	

## ARABIC.

## Professor JASTROW.

13. Elements of Arabic Grammar. Tu. Th. 12.....	2
Socin, <i>Arabic Grammar</i> , supplemented by lectures on the grammatical features of the language.	
14. Selections from the Prolegomena of Ibn. Khaldun (ed. Macdonald in Gottheil and Jastrow Semitic Study Series, No. 4). F. 12.15.....	I
15. Selections from the Kalila wa-Dimna. Th. 2.15.....	I
16. Outlines of the History of Arabic Literature. Omitted in 1908-09.....	I

## SEMITIC EPIGRAPHY.

Professor JASTROW.

Hours  
a week.

17. Semitic Epigraphy. Omitted in 1908-09.....  
 Selected Phoenician inscriptions. Lidzbarski; *Altsemitische Texte* I.

## HISTORY OF RELIGION.

Introductory course on the Elements in the Study of Religion together with a general survey of the History of Religion, one hour per week. M. 1.10

Attention is also called to the following courses which relate to the subject: Primitive Religions (Anthropology 5, page 324), The Literature of Christianity (Latin 4, page 331), and Church History (European History 8, page 348).

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**SOCIOLOGY:** see *Economics*.

**SPANISH:** see *Romanic Languages*.

**SUMERIAN:** see *Semitic Languages*.

**SYRIAC:** see *Semitic Languages*. .

**TRANSPORTATION AND COMMERCE:** see *Economics*.

**ZOOLOGY:** see *Botany*.

**GRADUATE DEPARTMENT FOR WOMEN.**

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**BOARD OF MANAGERS.**

**CHARLES C. HARRISON, LL. D.,**

Provost and *ex-officio* President.

**EDGAR F. SMITH, PH. D., Sc. D., LL. D.** **EDWIN S. CRAWLEY, PH. D.**

**WILLIAM A. LAMBERTON, A. M.,**

**CLARENCE G. CHILD, PH. D., Litt. D.**  
**L. H. D.** **LIGHTNER WITMER, PH. D.,**

**SIMON S. PATTEN, PH.D., LL. D. HERMAN V. AMES, A. M., PH. D.**

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The Graduate Department for Women is under the direct control of a Board of Managers appointed by the Corporation. As an integral part of the Graduate School, the courses of instruction are given by the same instructors, and lead to the same degrees. A statement of these courses will be found in the pages immediately preceding.

**FELLOWSHIPS AND SCHOLARSHIPS.**

For Fellowships and Scholarships open to women, see p. 320.

## **DEPARTMENT OF LAW.**

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### **FACULTY.**

**CHARLES C. HARRISON, LL. D., PROVOST.**

**EDGAR F. SMITH, PH. D., Sc. D., LL. D., VICE-PROVOST.**

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**HON. GEORGE M. DALLAS, LL. D., Emeritus Professor of Law.**

**GEORGE WHARTON PEPPER, A. M., LL. D., ALGERNON  
SYDNEY BIDDLE Professor of Law.**

**GEO. STUART PATTERSON, A. B., LL. B., Professor of Law.**

**WILLIAM DRAPER LEWIS, PH. D., Professor of Law, and DEAN  
OF THE FACULTY.**

**REYNOLDS D. BROWN, A. B., LL. B., Professor of Law.**

**JOHN W. PATTON, A. M., Professor of Law.**

**WILLIAM E. MIKELL, B. S., Professor of Law.**

**FRANCIS H. BOHLEN, LL. B., Professor of Law.**

**CRAWFORD D. HENING, A. B., Professor of Law.**

**OWEN J. ROBERTS, A. B., LL. B., Professor of Law.**

**HENRY WOLF BIKLÉ, A.M., LL.B., Assistant Professor of Law.**

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**NORMAN GREY, Lecturer on New Jersey Practice.**

**VICTOR B. WOOLLEY, B. S., Lecturer on Delaware Practice.**

**HON. CHARLES M. HOUGH, A. B., Lecturer on New York  
Practice.**

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**GARRETT ARTHUR BROWNBACK, A. B., LL. B., }  
ROBERT THOMPSON McCACKEN, B. S., LL. B., } Fellows.**

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*Librarian of the Biddle Memorial Law Library.*

**MRS. MARGARET C. KLINGELSMITH, LL. B.**

*Registrar.*

**B. M. SNOVER.**

(362)

## AUXILIARY TEACHING FORCE.

HON. ROBERT RALSTON, LL. B., Lecturer on Trial of Criminal Causes.

JOHN MARSHALL GEST, A. B., LL. B., A. M., Lecturer on Practical Suggestions for the Settlement of Estates and English Law in the Age of Elizabeth.

JOHN STOKES ADAMS, A. B., LL. B., Lecturer on the Law of Mines and Mining.

HORACE PETTIT, LL. B., Lecturer on the Law of Patents, Trade Marks and Copyrights.

HORACE STERN, A. B., LL. B., Lecturer on Conveyancing.

DAVID WERNER AMRAM, LL. B., A. M., Lecturer on Bankruptcy.

JOHN FREDERICK LEWIS, A. M., Lecturer on Admiralty Law and Practice.

HENRY FLANDERS, A. M., Lecturer on Legal Biography.

WILLIAM HENRY LOYD, A. B., LL. B., Lecturer on Statutes and Pennsylvania Legal History.

HENRY SANDWITH DRINKER, A. B., LL. B., Lecturer on the Law of Interstate Commerce and Practice before the Interstate Commerce Commission.

ALDEN I. ROSBROOK, LL. B., Lecturer on the Value of Testimony in the Trial of Causes.

CHARLES C. BINNEY, A. B., Lecturer on Legal Recourse against the Government.

GEORGE F. DEISER, A. B., LL. B., Lecturer on Sources of English Law.

\*RUSSELL DUANE, A. B., LL. B., Lecturer on the Trial of Causes.

## HISTORICAL SKETCH.

The first law lectures delivered in the University of Pennsylvania were given by the Honorable James Wilson, Associate Justice of the Supreme Court of the United States and Professor of Law in the University of Pennsylvania, in the winter of 1790. The Honorable George Sharswood was elected Professor of Law in 1850, and since that time the Department has had a continuous existence.

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\* Course given in alternate years. Omitted during 1908-09.

### LOCATION.

The building occupied by the Law Department is situated at the southwest corner of Thirty-fourth and Chestnut streets, adjacent to the other University buildings. At present it is the largest building in the United States devoted exclusively to the use of law students. The class-rooms and executive offices, quiz and student club-rooms, are on the ground floor. The entire second floor is devoted to the library and reading-rooms. The two reading-rooms for undergraduate students contain nearly six hundred separate desks or reading tables. Each registered student has one of these desks assigned to him, and is thus enabled to enjoy an undisturbed place of study. The graduate reading-room contains twenty-six large tables for the use of advanced students, members of the Bar, or others engaged in legal research.

### THE BIDDLE MEMORIAL LAW LIBRARY.

The Library of the Law School was founded by the family of George W. Biddle, as a memorial to his three sons, George, Algernon Sydney, and Arthur Biddle. The original gift of five thousand volumes was supplemented in 1897 by the presentation by Mrs. Arthur Biddle of over four thousand volumes, which had formed the library of the late Arthur Biddle, Esq. The family of the late Richard C. McMurtrie presented his law library to the University in 1906. Many other valuable gifts have been received from families and individual donors. About six thousand dollars is expended annually in the purchase of books. The number of volumes at present exceeds 40,000.

Each student is entitled to the use of one of the desks in the reading-rooms connected with the Library, and this desk is the property of the student during his connection with the Department.

The Library is open during the term every day, except Sundays, from 8 A. M. to 11 P. M.; and during the summer recess from 9 A. M. to 5 P. M.

### UNDERGRADUATE COURSE.

#### ADMISSION.

All applications for admission must be made to **WILLIAM DRAPER LEWIS, DEAN**, southwest corner of Thirty-fourth and Chestnut streets. The requirements are as follows:

**FIRST.** Any applicant of twenty years of age or upwards, holding the degree of Bachelor of Arts or its equivalent from a recognized college or university, will be admitted as a regular student.

**SECOND.** Any applicant of twenty years of age or upwards, who has satisfied the preliminary examination of the State Board of Law Examiners in the State in which he expects to practice, provided said examination is equivalent to the examination for admission into the freshman class of a college in good standing, will be admitted as a regular student.

**THIRD.** Applicants who are not college graduates, coming from States where the State Board of Law Examiners do not give examinations which are the equivalent of college entrance examinations, in order to be admitted must be at least twenty years of age, and must satisfy the requirements for admission to the freshman class of the College of this University. Candidates will be furnished by the Dean with a blank form of application for admission.

*Admission on College Diplomas.*—Whether the baccalaureate degree from a particular college will admit, depends on the standing of the institution, and the course taken by the applicant. Each case is considered separately.

#### ADVANCED STANDING.

Any person who, being entitled to admission to the first-year class, has been in regular attendance for at least one academic year of not less than eight months at another law school having a three years' course for its degree, will be admitted to the second-year class upon passing, in June, the annual examinations in the studies of the first year.

#### EXAMINATION IN BLACKSTONE.

An examination in Blackstone's *Commentaries* is held in June and September, along with the other entrance examinations. Those who do not present themselves for this examination will be required to pass such an examination at one of the regular examination periods in course. The examination will not include the "Introduction," or the notes of any of the editors. The applicant is, however, recommended to read such notes. He will not be examined on those portions of Book I dealing with the organization of the English government (Chaps. II to XIII, inclusive); or on those portions of Book III (Chaps. III to VI, inclusive), dealing with the organization of the English courts. He is recommended to read, instead, any standard work on the organization of government in the United States; and, for information on the present government of England, Anson's *Law and Custom of the Constitution*. He will not, however, be examined on either of these subjects.

## STATUS OF STUDENTS.

## (REGULAR, SPECIAL AND PARTIAL.)

A *regular* student is one who is regularly admitted to the Department, and who is a candidate for a degree.

A *special* student is one who is regularly admitted to the Department, but who, not being a candidate for a degree, does not take the regular course.

A *partial* student is one who is not regularly admitted to the Department, but who attends one or more courses. The admission of partial students is in the discretion of the Faculty.

## DEGREE.

The degree of *Bachelor of Laws (LL. B.)* is granted to students who have completed satisfactorily the full course of instruction in the Department of Law; and to those who, having been regularly admitted to advanced standing, have satisfactorily completed the work of the second and third years. In both cases, candidates must have passed satisfactory examinations upon all subjects of instruction.

## ACADEMIC YEAR.

The academic year begins on the last Friday of September, and ends on the third Wednesday in June, both inclusive.

## COURSE OF INSTRUCTION.

The course of instruction extends through three full academic years. The object of the Department is to teach the principles of the common law in such a way as to fit its graduates for successful practice. It is, therefore, the aim of the members of the Faculty so to conduct their respective courses that the student may acquire not only a knowledge of the rules of law, but also the ability to deal with legal problems.

Every candidate for a degree will be required to take all of the subjects of the first and second year, except second-year Practice. The third-year course is elective: the candidate is required in this year to take a minimum of fourteen hours a week. If the student omits the course in Practice in the second year, he must elect a third-year subject in its place; or, on application to the Faculty, he may be permitted to substitute, under the supervision of the Dean, the study of the practice or statutes of the jurisdiction in which he expects to practice.

## UNDERGRADUATE COURSE.

367

## FIRST YEAR.

Hours  
a week.

Torts ..... 2

*Professor BOHLEN.*Pleading: Ames' *Cases on Pleading* ..... 1  
*Professor PATTERSON.*Equity: (Bills of Peace, Interpleader, Quia Timet, Removal  
of Cloud upon Title, Jurisdiction of Equity over Torts).Lewis' *Cases* ..... 2  
*Professor LEWIS.*Property: (Personal Property; Historical Introduction to  
Real Property; Nature of Ownership of Real Property,  
and Rights in Another's Land). Gray's *Cases in Prop-  
erty* ..... 2*Professor BROWN.*Criminal Law: Mikell's *Cases on Criminal Law* ..... 2  
*Professor MIKELL.*Contracts ..... 3  
*Professor HENING.*

## SECOND YEAR.

Evidence ..... 2  
*Professor BOHLEN.*Law of Association: (Partnerships and Corporations) Pepper  
and Lewis' *Cases* ..... 2  
*Professor LEWIS.*Equity: (Trusts). Ames' *Cases* ..... 2  
*Professor LEWIS.*Practice: (Orphans' Court) ..... 1  
*Professor PATTON.*Contracts: (Sales). Burdick's *Cases on Sales* ..... 2  
*Professor MIKELL.*Quasi Contracts ..... 1  
*Professor BOHLEN.*

Hours  
a week.

Bills and Notes.....	1 $\frac{1}{2}$
<i>Professor HENING.</i>	
Property: (Acquisition of Property, <i>Inter Vivos</i> , and on Death of Former Owner). Gray's <i>Cases on Property</i> .....	2
<i>Professor ROBERTS.</i>	

**THIRD YEAR.**

Law of Association: (Partnership and Corporations). Syllabus and Selected Cases .....	2
<i>Professor PEPPER.</i>	

Constitutional Law .....	3
<i>Professor PATTERSON.</i>	

Equity: (The Jurisdiction of Equity over Contracts, including the specific performance, reformation and revision thereof; Account; Equitable Conversion). Lewis' <i>Cases</i> (advance sheets) .....	3
<i>Professor LEWIS.</i>	

Property: (Acquisition of Real Property, <i>Inter Vivos</i> , and on Death of Former Owner; Priority, including Fraudulent Conveyances and the Recording Laws). Gray's <i>Cases on Property</i> .....	2
<i>Professor BROWN.</i>	

Practice (Pennsylvania) .....	2
<i>Professor PATTON.</i>	

Conflict of Laws .....	2
<i>Professor MIKELL.</i>	

Negligence and Damages .....	2
<i>Professor BOHLEN.</i>	

Suretyship .....	1
<i>Professor HENING.</i>	

Equity Pleading and Practice .....	2
<i>Professor HENING.</i>	

Carriers .....	1
<i>Assistant Professor BIKLÉ.</i>	

Hours  
a week.

Practice: (New Jersey) .....	2
Mr. GREY.	
Practice: (New York) .....	1
Judge HOUGH.	
Practice: (Delaware) .....	2
Mr. WOOLLEY.	
Practice: (Code) .....	1
Assistant Professor BIKLÉ.	
* Pennsylvania Law .....	2
Assistant Professor BIKLÉ.	

## AUXILIARY COURSE OF INSTRUCTION.

The Auxiliary Course is intended to give students an opportunity to obtain information on subjects which are either directly practical or which tend to broaden their legal intellectual horizon. Except where otherwise indicated lectures in the Auxiliary Course are open to all regular and special students. A unit of work in the Auxiliary Course is the attendance on one lecture of one hour duration. Prior to graduation all students must take fifty units of work in the Auxiliary Course. Any student may take additional units if he so desires.

LECTURES. 1908-09.	Units.
Legal Biography.....	12
Mr. FLANDERS.	
Admiralty Law and Practice.....	20
Mr. (JOHN F.) LEWIS.	
English Law in the Reign of Queen Elizabeth.....	4
Mr. GEST.	
Practical Suggestions for the Settlement of Estates.....	3
Mr. GEST.	
Trial of Criminal Causes.....	3
HON. ROBERT RALSTON.	

\* Voluntary course.

	Units
The Law of Mines and Mining.....	10
<i>Mr. ADAMS.</i>	
The Law of Patents, Trade-Marks and Copyrights.....	11
<i>Mr. PETTIT.</i>	
Bankruptcy.....	8
<i>Mr. AMRAM.</i>	
History of the Courts of Pennsylvania.....	9
<i>Mr. LOYD.</i>	
Statutes.....	15
<i>Mr. LOYD.</i>	
Conveyancing.....	12
<i>Mr. STERN.</i>	
Law of Interstate Commerce and Practice before the Interstate Commerce Commission.....	10
<i>Mr. DRINKER.</i>	
The Law of Mines and Mining .....	10
<i>Mr. ADAMS.</i>	
Legal Recourse Against the Government.....	10
<i>Mr. BINNEY.</i>	
Value of Testimony in the Trial of Causes.....	6
<i>Mr. ROSBROOK.</i>	
Sources of English Law.....	5
<i>Mr. DEISER.</i>	
* Trial of Civil Causes .....	5
<i>Mr. DUANE.</i>	

#### ATTENDANCE ON COURSES IN OTHER DEPARTMENTS.

Students in the Department of Law may attend, without extra charge, the lectures given in any of the other Departments of the University, on obtaining the consent of the Dean of the Law Faculty, and of the Dean of the Faculty under which they desire instruction.

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\* Course given in alternate years. Omitted during 1908-09.

### SCHOLARSHIPS.

1. **FACULTY SCHOLARSHIPS.**—Three scholarships are granted by the Faculty in each class. These scholarships are granted only to those who hold the degree of Bachelor of Arts, or its equivalent, from a recognized university or college. The Faculty reserves the right to withdraw any of these scholarships at any time when, in their judgment, the progress of the holder does not justify its continuance.

2. **PUBLIC SCHOOL PRIZE SCHOLARSHIPS.**—Under an agreement with the city of Philadelphia, fifty free scholarships exist in the University for the benefit of graduates from the public schools. The candidates for these scholarships are examined by the Board of Public Education, whenever vacancies occur, and award is made to those who reach the highest grade in the examination.

### PRIZES.

**ESSAY PRIZES.**—The Society of the Alumni of the Department of Law has established two prizes, one of seventy-five dollars, called the SHARSWOOD PRIZE, and one of fifty dollars, called the MEREDITH PRIZE. They are awarded annually by the Faculty for the best and second-best essay written by members of the graduating class.

The P. PEMBERTON MORRIS PRIZE of forty dollars is awarded annually to that member of the graduating class who submits the best examinations in Evidence, Pleading and Practice.

Mr. and Mrs. Charles H. Vendig, in memory of their son, NORMAN CASSERES VENDIG, have established an annual prize of twenty-five dollars, payable to that student in the First Year Class, in the Department of Law, who shall have attained, in the judgment of the Faculty of that Department, the highest average in his Law School work.

### MOOT COURTS.

There are several student Law Clubs, under the auspices of which Moot Courts are held. Cases prepared by the Professors and instructors are argued. Each of these courts meets once a week during the term, some member of the Faculty usually presiding.

### TUITION FEES AND EXPENSES.

Each regular and special student pays on entering a matriculation fee of \$5.00 and makes a deposit with the Bursar of \$5.00. The deposit will be returned upon graduation or withdrawal, pro-

vided there is no charge against the same. In addition, each regular and special student pays an annual tuition fee of \$160.00, and an annual fee of \$10.00 for the privileges of the Gymnasium and Houston Club.

Each partial student pays the matriculation fee, the deposit and the annual Gymnasium and Houston Club fee. The annual tuition fee for partial students is determined in each case by the number of subjects taken.

Fees are payable in two parts of eighty-five dollars (\$85.00) each, due on October 1, and on February 1.

*An addition is made to fees not paid within thirty-one days of the day when they become due. All fees are payable at the Bursar's office, Room 102, College Hall. Remittances should be in cash, or by bank draft, certified cheque, or postal money order, drawn for the exact amount due.*

#### BOARD AND LODGING.

The University Dormitories are situated within five minutes' walk of the Law Building. Those who desire to secure dormitory rooms in advance should communicate with the Bursar of the University. Board and lodging may also be obtained in the neighborhood of the University ranging from \$5.00 a week upward.

#### MINIMUM ANNUAL EXPENSES.\*

Matriculation Fee (payable once only) .....	\$5 00
Tuition .....	160 00
Gymnasium and Houston Club Fee .....	10 00
Board and Lodging .....	175 00
Total.....	\$350 00

#### GRADUATE COURSE.

#### REQUIREMENTS FOR REGISTRATION.

Any one who has received the degree of Bachelor of Laws, or an equivalent degree from a law school belonging to the Association of American Law Schools, may petition for registration as a graduate student. The petition shall state in detail the legal work which

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\* The cost of books should not exceed \$20.00 a year. A deposit of \$5.00 upon matriculating is required from each student.

the student desires to pursue as a graduate student. The petition shall be referred to the Advisory Committee of the Faculty for action.

#### THE DEGREE OF MASTER OF LAW.

Any one shall be entitled to the degree of Master of Law who has,

(a) Been registered as a graduate student for one or more scholastic years.

(b) Written under the direction of a member or members of the Faculty a work worthy of being published under the auspices of the Law Department of the University.

(c) Passed such examination or examinations on the subject of his thesis as shall be prescribed by the Faculty.

(d) Published this thesis or other legal work in a form acceptable to the Faculty.

#### FEE.

The fee for the registration as a graduate student shall be \$100.00.

## **DEPARTMENT OF MEDICINE.**

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### **FACULTY.**

**CHARLES C. HARRISON, LL. D., PROVOST.**

**EDGAR F. SMITH, PH. D., SC. D., LL. D., VICE-PROVOST.**

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**HORATIO C. WOOD, M. D., LL. D., Emeritus Professor of  
Materia Medica, Pharmacy and General Therapeutics.**

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### **PROFESSORS.**

**JAMES TYSON, M. D., LL. D., Professor of Medicine.**

**EDWARD T. REICHERT, M. D., Professor of Physiology.**

**BARTON COOKE HIRST, M. D., Professor of Obstetrics.**

**J. WILLIAM WHITE, M. D., LL. D., JOHN RHEA BARTON Professor of Surgery.**

**GEORGE A. PIERSOL, M. D., Sc. D., Professor of Anatomy.**

**JOHN MARSHALL, M. D., NAT. SC. D., LL. D., Professor of Chemistry and Toxicology.**

**LOUIS A. DUHRING, M. D., Professor of Dermatology.**

**\*ALEXANDER C. ABBOTT, M. D., SC. D., PEPPER Professor of Hygiene, and Bacteriology.**

**JOHN G. CLARK, M. D., Professor of Gynecology.**

**GEORGE E. DE SCHWEINITZ, M. D., Professor of Ophthalmology.**

**CHARLES H. FRAZIER, M. D., Professor of Clinical Surgery,  
and DEAN OF THE FACULTY**

**ALLEN J. SMITH, M. D., Professor of Pathology.**

**DAVID L. EDSALL, M. D., Professor of Therapeutics and Pharmacology.**

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\* Absent on Public Business.

**DR FOREST WILLARD, M. D., PH. D., Professor of Orthopedic Surgery.**

**JOHN H. MUSSER, M. D., Professor of Clinical Medicine.**

**ALFRED STENGEL, M. D., Professor of Clinical Medicine.**

**EDWARD MARTIN, M. D., Professor of Clinical Surgery.**

**CHARLES K. MILLS, M. D., Professor of Neurology.**

**WILLIAM G. SPILLER, M. D., Professor of Neuro-pathology.**

**CHARLES W. BURR, M. D., Professor of Mental Diseases.**

**R. TAIT McKENZIE, M. D., Professor of Physical Education.**

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#### ON THE GEORGE B. WOOD FOUNDATION.

**DANIEL J. McCARTHY, M. D., Professor of Medical Jurisprudence.**

**Professor of Botany.**

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#### CLINICAL PROFESSORS.

**B. ALEXANDER RANDALL, M. D., PH. D., Clinical Professor of Diseases of the Ear.**

**J. P. CROZER GRIFFITH, M. D., Clinical Professor of Diseases of Children.**

**THOMAS R. NEILSON, M. D., Clinical Professor of Genito-Urinary Diseases.**

**CHARLES P. GRAYSON, M. D., Clinical Professor of Laryngology and Rhinology.**

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#### ASSOCIATE PROFESSORS.

**GWILYM G. DAVIS, M. D., M. R. C. S. (Eng.), Associate Professor of Applied Anatomy.**

**WILLIAM G. SPILLER, M. D., Associate Professor of Neurology.**

**HORATIO C. WOOD, JR., M. D., Associate Professor of Pharmacology.**

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#### ADJUNCT PROFESSORS.

**J. ALISON SCOTT, M. D., Adjunct Professor of Medicine.**

**RICHARD H. HARTE, M. D., Adjunct Professor of Surgery.**

**JAMES P. HUTCHINSON, M. D., Adjunct Professor of Surgery.**

**THOMAS G. ASHTON, M. D., Adjunct Professor of Medicine.**

## ASSISTANT PROFESSORS.

M. HOWARD FUSSELL, M. D., Assistant Professor of Medicine.  
ALFRED C. WOOD, M. D., Assistant Professor of Surgery.  
RICHARD C. NORRIS, M. D., Assistant Professor of Obstetrics.  
DAVID H. BERGEY, M. D., Assistant Professor of Bacteriology.  
LEO LOEB, M. D., Assistant Professor of Experimental Pathology.  
ALOYSIUS O. J. KELLY, M. D., Assistant Professor of Medicine.  
WILLIAM PEPPER, M. D., Assistant Professor of Clinical Pathology.  
DAVID RIESMAN, M. D., Assistant Professor of Medicine.  
JOSEPH SAILER, M. D., Assistant Professor of Medicine.  
J. EDWIN SWEET, M. D., Assistant Professor of Experimental Surgery.  
WARFIELD T. LONGCOPE, M. D., Assistant Professor of Applied Medicine.

## DEMONSTRATORS.

DANIEL W. FETTEROLF, M. D., Demonstrator of Chemistry.  
WILLIAM SCHLEIF, M. D., Demonstrator of Materia Medica and Medical Pharmacy.  
EDWARD LODHOLZ, M. D., Demonstrator of Physiology.  
GEORGE FETTEROLF, M. D., Demonstrator of Anatomy.  
WALTER S. CORNELL, M. D., Demonstrator of Osteology.  
WILLIAM H. F. ADDISON, M. B., Demonstrator of Histology.  
WILLIAM HENRY WELKER, PH. D., Demonstrator of Physiological Chemistry.  
HOWARD T. KARSNER, M. D., Demonstrator of Pathology.

## ASSOCIATES.

MILTON B. HARTZELL, M. D., Associate in Dermatology.  
HENRY D. BEYEA, M. D., Associate in Gynecology.  
THOMPSON S. WESTCOTT, M. D., Associate in Pediatrics.  
JAMES K. YOUNG, M. D., Associate in Orthopedic Surgery.  
HERMAN B. ALLYN, M. D., Associate in Medicine.  
NATHANIEL GILDERSLEEVE, M. D., Associate in Bacteriology.

JOHN H. GIRVIN, M. D., Associate in Obstetrics.  
WILLIAM R. NICHOLSON, M. D., Associate in Obstetrics.  
JAMES W. McCONNELL, M. D., Associate in Neurology.  
GEORGE W. NORRIS, M. D., Associate in Medicine.  
BROOKE M. ANSPACH, M. D., Associate in Gynecology.  
JOHN B. CARNETT, M. D., Associate in Surgery.  
GEORGE P. MÜLLER, M. D., Associate in Surgery.  
JOHN H. JOPSON, M. D., Associate in Surgery.  
T. TURNER THOMAS, M. D., Associate in Surgery.

## LECTURERS.

ARTHUR A. STEVENS, M. D., Lecturer on Medical Terminology and Physical Diagnosis.  
B. FRANKLIN STAHL, M. D., Lecturer on Dietetics of the Sick.  
HENRY K. PANCOAST, M. D., Lecturer on Skiagraphy.  
JOHN T. CARPENTER, M. D., Lecturer on Ophthalmology.  
ALFRED R. ALLEN, M. D., Lecturer on Neurological Electro-therapeutics.

## INSTRUCTORS AND ASSISTANT DEMONSTRATORS.

GEORGE H. CHAMBERS, M. D., Assistant Demonstrator of Normal Histology.  
HENRY A. NEWBOLD, M. D., Assistant Demonstrator of Materia Medica and Medical Pharmacy.  
ARTHUR A. STEVENS, M. D., Instructor in Physical Diagnosis.  
B. FRANKLIN STAHL, M. D., Instructor in Physical Diagnosis.  
J. REX HOBENSACK, M. D., Assistant Demonstrator of Anatomy.  
LEON A. RYAN, PH. D., Assistant Demonstrator of Chemistry.  
SHERBOURNE W. DOUGHERTY, M. D., Instructor in Physical Diagnosis.  
HENRY D. JUMP, M. D., Instructor in Medicine.  
JOHN J. ROBRECHT, M. D., Assistant Demonstrator of Anatomy.  
RICHARD F. GERLACH, M. D., Assistant Demonstrator of Anatomy.  
JOHN M. CRUICE, M. D., Instructor in Medicine.  
ALBERT P. FRANCINE, M. D., Instructor in Medicine.

MAURICE OSTHEIMER, M. D., Instructor in Pediatrics.  
WILLIAM E. QUICKSALL, M. D., Assistant Demonstrator of Anatomy.  
HOWARD A. SUTTON, M. D., Assistant Demonstrator of Anatomy.  
CHARLES C. NORRIS, M. D., Instructor in Gynecology.  
DANIEL M. HOYT, M. D., Instructor in Therapeutics.  
EDWARD A. SHUMWAY, M. D., Instructor in Ophthalmology.  
WALTER S. CORNELL, M. D., Assistant Demonstrator of Anatomy.  
WILLIAM T. CUMMINS, M. D., Assistant Demonstrator of Pathology.  
E. HOLLINGSWORTH SITER, M. D., Instructor in Genito-Urinary Diseases.  
JOSEPH S. EVANS, JR., M. D., Instructor in Medicine.  
H. MAXWELL LANGDON, M. D., Instructor in Ophthalmology.  
THOMAS B. HOLLOWAY, M. D., Instructor in Ophthalmology.  
CLIFFORD B. FARR, M. D., Instructor in Medicine.  
CHARLES A. FIFE, M. D., Instructor in Pediatrics.  
HOWARD C. CARPENTER, M. D., Instructor in Pediatrics.  
HAROLD B. WOOD, M. D., Assistant Demonstrator of Normal Histology.  
RALPH S. LAVENSON, M. D., Assistant Demonstrator of Gross Morbid Anatomy.  
JOSEPH M. SPELLISSY, M. D., Instructor in Orthopedic Surgery.  
WALTER G. ELMER, M. D., Instructor in Orthopedic Surgery.  
WARREN C. GOODWIN, M. D., Assistant Demonstrator of Anatomy.  
WILLIAM B. SMALL, M. D., Instructor in Gynecology.  
PHILIP S. STOUT, M. D., Assistant Demonstrator of Pathology.  
PENN-GASKELL SKILLERN, JR., M. D., Assistant Demonstrator of Anatomy.  
RUFUS B. SCARLETT, M. D., Assistant Demonstrator of Pathological Histology.  
JOHN M. CAMPBELL, M. D., Assistant Demonstrator of Pathological Histology.  
RALPH BUTLER, M. D., Instructor in Otology.

ALFRED R. ALLEN, M. D., Instructor in Neurology and Neuro-pathology.

S. D. LUDLUM, M. D., Instructor in Neurology and in Neuro-pathology.

NATE GINSBURG, M. D., Assistant Demonstrator of Anatomy.

CHARLES H. WEBER, M. D., Instructor in Physical Diagnosis.

WILLIAM F. MOORE, M. D., Instructor in Physical Diagnosis.

FLOYD E. KEENE, M. D., Instructor in Gynecology.

THOMAS A. O'HARA, M. D., Instructor in Orthopedic Surgery.

CARL WILLIAMS, M. D., Instructor in Ophthalmology.

BENJAMIN L. SINGER, M. D., Instructor in Laryngology.

WALTER S. HARGETT, M. D., Instructor in Laryngology.

CHARLES H. GERHARD, M. D., Assistant Demonstrator of Pathology.

J. CLAXTON GITTINGS, M. D., Instructor in Pediatrics.

FRED H. KLAER, M. D., Instructor in Medicine.

THOMAS A. COPE, M. D., Instructor in Medicine.

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#### ASSISTANT INSTRUCTORS.

WILLIAM A. N. DORLAND, M. D., Assistant Instructor in Obstetrics.

GEORGE D. MORTON, M. D., Assistant Instructor in Surgery.

JOHN C. HIRST, M. D., Assistant Instructor in Obstetrics.

JOHN BUSCH, M. D., Assistant Instructor in Surgery.

JEAN J. A. VAN KAATHOVEN, M. D., Assistant Instructor in Surgery.

ALEXANDER A. UHLE, M. D., Assistant Instructor in Genito-Urinary Diseases.

J. H. ALLEN, M. D., Assistant Instructor in Obstetrics.

JOHN SPEESE, M. D., Assistant Instructor in Surgery.

L. F. LUBURG, M. D., Assistant Instructor in Obstetrics.

RALPH PEMBERTON, M. D., Assistant Instructor in Medicine.

BENJAMIN A. THOMAS, M. D., Assistant Instructor in Surgery.

HOWARD KENNEDY HILL, M. D., Assistant Instructor in Medicine.

GEORGE MORRIS PIERSOL, M. D., Assistant Instructor in Medicine.

FREDERICK PRIME, JR., M. D., Assistant Instructor in Surgery.

CHARLES F. MITCHELL, M. D., Assistant Instructor in Surgery.

ELDRIDGE S. ELIASON, M. D., Assistant Instructor in Surgery.

BENJAMIN D. PARISH, M. D., Assistant Instructor in Otology.

EDWARD HARRIS GOODMAN, M. D., Assistant Instructor in Medicine.

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#### PROSECTOR.

ASTLEY P. C. ASHHURST, M. D., Prosector to the Associate Professor of Applied Anatomy.

GEORGE MORRIS PIERSOL, M. D., Prosector to the Professor of Anatomy.

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#### ASSISTANTS.

REUBEN A. BOGLIA, M. D., Assistant in Physiology.

CHARLES J. HUNT, M. D., Assistant in Physiology.

J. GARRETT HICKEY, D. D. S., Assistant in Physiology.

CHARLES C. NORRIS, M. D., Assistant in Gynecological Pathology.

RALPH BUTLER, M. D., Assistant in Otological Pathology.

C. M. HOSMER, M. D., Assistant in Ophthalmological Pathology.

SAMUEL LEOPOLD, M. D., Assistant in Neuro-pathology.

ARDREY WHIDDIN DOWNS, M. D., Assistant in Physiology.

HARRY A. SCHATZ, M. D., Second Assistant in Bacteriology.

SYLVESTER J. DEEHAN, M. D., Third Assistant in Bacteriology.

DAVID M. P. MAGEE, M. D., Assistant in Physiology.

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#### SPECIAL LECTURER.

JAY F. SCHAMBERG, M. D., Lecturer on Infectious Eruptive Diseases.

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S. GUCKES, *Secretary.*

**PREFATORY NOTE.**

This venerable institution, the oldest Medical School in the United States, was founded in 1765 by Dr. JOHN MORGAN, who filled in it the first medical professorship created in America. In his opening "Discourse upon the Institution of Medical Schools in America," delivered in the College of Philadelphia, May 30, 1765, Dr. MORGAN uttered these prophetic words: "Perhaps this medical institution, the first of its kind in America, though small in its beginning, may receive a constant increase of strength, and annually exert new vigor. It may collect a number of young persons, of more than ordinary abilities, and so improve their knowledge as to spread its reputation to distant parts. By sending these abroad duly qualified, or by exciting an emulation amongst men of parts and literature, it may give birth to other useful institutions of a similar nature, or occasional rise, by its example, to numerous societies of different kinds, calculated to spread the light of knowledge through the whole American continent, wherever inhabited."

Through Dr. MORGAN, the pupil of HUNTER in London and of CULLEN in Edinburgh, the graduates of this school take a just pride in regarding it as the lineal descendant of the best medical schools of Great Britain in the last century. To Dr. MORGAN was soon joined another pupil of CULLEN, Dr. WILLIAM SHIPPEN, as Professor of Anatomy and Surgery, thus forming another tie of relationship to the celebrated University of Edinburgh, whose methods of instruction were substantially adopted here. In the next year Dr. ADAM KUHN was added as Professor of Botany and Materia Medica; and on June 21, 1768, a Commencement was held, at which medical honors were bestowed, the first in point of time in America. In 1769, Dr. BENJAMIN RUSH was elected to the Professorship of Chemistry, while Dr. THOMAS BOND, one of the trustees of the College of Philadelphia, delivered lectures on Clinical Medicine in the Pennsylvania Hospital.

To the faculty thus composed of MORGAN, SHIPPEN, KUHN and RUSH have succeeded, at various times, professors whose reputations have been national, such as BARTON, WISTAR, CHAPMAN, PHYSICK, DEWEES, HORNER, HARE, GIBSON, JACKSON, GEORGE B. WOOD, HODGE, JAMES B. ROGERS, CARSON, PEPPER, FRANCIS GURNEY SMITH, NEILL, HENRY H. SMITH, LEIDY, D. HAYES AGNEW, GOODELL, the younger PEPPER, STILLÉ, ASHHURST, and NORRIS.

The number of graduates of the Department of Medicine is 13,200.

**ADMISSION REQUIREMENTS.****ANNOUNCEMENT.**

In the past the requirements for admission to this Department have been equivalent to those prescribed for admission to the Freshman Class of the College. The University has decided to make important additions to the requirements, some of which have been in force for the class entering the session of 1908-09; others of these additions are to be enforced for admission in 1909, and the full requirements contemplated will be demanded of candidates entering in 1910 and thereafter.

**BRIEFLY OUTLINED THE NEW REQUIREMENTS  
ARE AS FOLLOWS:**

**FOR THE ACADEMIC YEAR 1909-1910.**—Candidates must have successfully completed work equivalent to that prescribed for the Freshman Class in colleges recognized by this University, which must include a knowledge of Physics, Chemistry and General Biology or Zoology, together with appropriate laboratory work in each of these subjects, as specified by the College Entrance Examination Board, and two foreign languages, one of which must be French or German. (For detailed information, see pages 383-398.)

Certificates from recognized colleges covering these requirements will be accepted in lieu of an examination.

**FOR THE ACADEMIC YEAR 1910-1911.**—Candidates must have successfully completed work equivalent to that prescribed for the Freshman and Sophomore Classes in colleges recognized by this University, which must include a knowledge of Physics, Chemistry and General Biology or Zoology, together with appropriate laboratory work in each of these subjects, as specified by the College Entrance Examination Board, and two foreign languages, one of which must be French or German. (For detailed information, see pages 383-398.)

TS.

A total of 35 units may be made by offering any of the electives.

I.

A. COLLEGE ENTRANCE  
MENTS

(16-23 uni

	ELECTIVE SUBJECTS† FOR COMPLETION OF REQUIRED TOTAL OF UNITS.
English .....	ish (advanced) ..... 3 units.
History .....	ematics " ..... 1 or 2 "
Mathematics:	
Algebra .....	ix " ..... 3 "
Plane Geometry .....	x " ..... 3 "
*Latin .....	ch " ..... 9 "
*Greek .....	ch " ..... 3 "
*Elementary German .....	ian " ..... 3 "
or	
*Elementary French .....	er foreign modern scientific languages e credited as in the Arts and Science tment of the College of this Univer-

\*The two may be  
Frenchman the total  
amount or German of  
B (a t

†Performed by the  
candidate

‡The Freshman Year  
in respect of this Uni-  
versity



Certificates from recognized colleges covering these requirements will be accepted in lieu of an examination.

**EXCEPTIONS TO ABOVE.**—Candidates who have had insufficient preparation in Physics, Chemistry, General Biology or Zoology, but who have successfully completed at least three years of an accepted College course will be admitted with conditions in these subjects. These conditions may be removed at least in part through the successful completion of courses offered in the Summer School, whose six weeks' session begins July 6th. Inquiries concerning such summer work should be addressed to the Director of the Summer School, College Hall.

**I. Admission by Diploma or Certificate.**—All diplomas and certificates should be transmitted to the Dean of the Medical

- Faculty as early as possible in June, for decision in early summer; should this, for good reasons, be impossible, then not later than September 1st. Candidates will appreciate the importance of sending in their credentials at as early a date as possible when they understand that, until these have been acted upon and the decision announced, they will not know in what subjects they will be required to take examination. Diploma or certificate must be accompanied by an official statement of the exact amount of Physics, Chemistry and either General Biology or Zoology and the laboratory note-books of the candidate in these subjects, and by a similar official statement of the extent of work in foreign languages and other subjects done by the candidate, with the mark or grade attained in each.

(Blanks for this purpose may be obtained upon application to the Dean.)

**II. Admission by Examination.**—Examinations for admission to the first-year class in 1909 will be held in College Hall, beginning respectively on Thursday, June 17, at 9 A. M., and Thursday, September 16, at 9 A. M. Candidates may elect between these two dates.

Candidates will be required to register in College Hall between 9 and 11 A. M., either on Thursday, June 17, or on Thursday, September 16, and to undergo the examinations beginning on the same day.

**UNIT VALUES OF SUBJECTS REQUIRED FOR ADMISSION,  
SESSION 1909-1910.**

For unconditioned admission to the first-year class in the fall of 1909 a total amount of not less than 35 units (a unit is held to represent work in a given subject of one hour per week for a full academic year in lectures or recitations, or two hours per week of laboratory exercises for the same period) must be offered either by certificate or by examination. These 35 units must be made up from the following four groups, Groups I and II representing the entrance requirements of the College of this University, Group III representing special scientific preparation required for Medical study, and Group IV including a group of subjects of a Freshman course from which may be offered additional required units.

I. Each candidate must offer English **A**, **B**, two branches of History and Mathematics **A**, **C**, amounting in all to 10 units.

*English:*

<b>A</b> —Reading and Practice.....	2 units	•
<b>B</b> —Study and Practice.....	2 "	

*History:* Any two of the following:

<b>A</b> —Ancient History.....	1 unit	
<b>B</b> —Medieval and Modern History.....	1 "	
<b>C</b> —English History.....	1 "	
<b>D</b> —American History and Civil Government.....	1 "	

*Mathematics:*

<b>A</b> —Elementary Algebra.....	2 units	
<b>C</b> —Plane Geometry.....	2 "	

(Note that in Group III Elementary Plane Trigonometry, as preparatory to Physics, is also required.)

II. Each candidate must offer two of the four languages (aggregating from 6 to 13 units) contained in this group (one of these must be either German or French); and he must offer as much of the two selected as is stated here.\*

*Latin:*

<b>B</b> —Cæsar, Gallic War, Bks. I-IV.....	1 unit	
<b>C</b> —Cicero, Six Orations.....	2 units	
<b>D</b> —Vergil, Aeneid, Bks. I-VI.....	2 "	
<b>L</b> —Prose Composition.....	1 unit	
<b>M</b> —Sight Translation of Prose.....	1 "	

\* Note that in case of French or German there is further required in Group IV additional work to insure the possession by the candidate of a fair reading ability in such language.

*Greek:*

B—Xenophon, Anabasis, Bks. I-IV.....	2 units
C—Homer, Iliad, Bks. I-III.....	2 "
F—Prose Composition.....	1 unit
G—Sight Translation of Prose.....	1 "

*French:*

A—Elementary French.....	3 units
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*German:*

A—Elementary German.....	3 "
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**III.** The following special subjects (representing a total of 10 units) must also be offered for admission to the Medical Department. They must (with the exception of the first, which is preparatory to Physics) include laboratory work, and evidence of such exercise in the shape of the candidate's laboratory note-books must be presented, accompanied by the usual teachers' certificates as to the trustworthiness of the record. (These subjects may have been offered either for admission to a college course or may have formed part of that college course.)

Mathematics F, Plane Trigonometry (Elementary).....	1 unit
General and Inorganic Chemistry (including Qualitative Analysis).....	3 units
Physics B .....	3 "
General Biology or Zoölogy.....	3 "

**IV.** In addition to the foregoing (with a minimum of 26 units) the candidate must offer at least a sufficient number of units of work done in a college recognized by this University (or present evidence of the equivalent of such work), to insure a minimum total of 35 units. In this additional requirement a reasonable amount of latitude in the distribution of units will be allowed, following the unit values of similar studies in the Course in Arts and Sciences of this University. However, French or German as specified below must be offered in sequence to the elementary work in such language prescribed in Group II. As examples of the various courses from which the candidate may attain the necessary additional units the following courses of the College, Arts and Science, of this University may be presented with their unit values:

*English:*

Courses 231, 232 and 234.....	3 units
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*History:*

Any one of courses 362, 363, 364, 365.....	2 "
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*Mathematics:*

Course 461 . . . . .	1 unit.
OR	

Course 463 . . . . .	2 units
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*Greek:*

Course 331 . . . . .	3 "
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*Latin:*

Courses 431 A, 431 B, 431 C, 432 A, 432 B, 432 C . . . . .	9 "
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*French:*

Course 282 (C. E. E. B. French B) . . . . .	3 "
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*German:*

Course 322 (C. E. E. B. German B) . . . . .	3 "
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(Credit may be given for knowledge of foreign languages not included in the above list.)

### DESCRIPTION OF SUBJECTS REQUIRED FOR ADMISSION.

#### I.

##### **ENGLISH.**

No candidate will be accepted in English whose work is notably defective in spelling, punctuation, idiom or division into paragraphs.

A. (1) GRAMMAR and ANALYSIS, as in any advanced course in English Grammar, Analysis and Composition. (2) The writing of several paragraphs, correct in spelling, punctuation, grammar and expression, written on subjects taken from the following works, a general knowledge of which is required.

In 1909, 1910 and 1911 the student will be given some choice in the reading for A (2). The form of examination will be the writing of a paragraph or two on each of several topics chosen by the candidate from a considerable number—perhaps ten or fifteen—set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books.

The list for 1909, 1910, 1911 follows:

*Group I* (two to be selected).

Shakespeare's *As You Like It*, *Henry V*, *Julius Caesar*, *The Merchant of Venice*, *Twelfth Night*.

*Group II* (one to be selected).

Bacon's *Essays*; Bunyan's *The Pilgrim's Progress, Part I*; *The Sir Roger de Coverley Papers* in *The Spectator*; Franklin's *Autobiography*.

*Group III* (one to be selected).

Chaucer's *Prologue*; Spenser's *Faerie Queene* (selections); Pope's *The Rape of the Lock*; Goldsmith's *The Deserted Village*; Palgrave's *Golden Treasury (First Series)*, Books II and III, with especial attention to Dryden, Collins, Gray, Cowper and Burns.

*Group IV* (two to be selected).

Goldsmith's *The Vicar of Wakefield*; Scott's *Ivanhoe*; Scott's *Quentin Durward*; Hawthorne's *The House of the Seven Gables*; Thackeray's *Henry Esmond*; Mrs. Gaskell's *Cranford*; Dickens' *A Tale of Two Cities*; George Eliot's *Silas Marner*; Blackmore's *Lorna Doone*.

*Group V* (two to be selected).

Irving's *Sketch Book*; Lamb's *Essays of Elia*; De Quincey's *Jean of Arc* and *The English Mail Coach*; Carlyle's *Heroes and Hero Worship*; Emerson's *Essays*; Ruskin's *Sesame and Lilies*.

*Group VI* (two to be selected).

Coleridge's *The Ancient Mariner*; Scott's *The Lady of the Lake*; Byron's *Mazeppa* and *The Prisoner of Chillon*; Palgrave's *Golden Treasury (First Series)*, Book IV, with especial attention to Wordsworth, Keats and Shelley; Macaulay's *Lays of Ancient Rome*; Poe's *Poems*; Lowell's *The Vision of Sir Launfal*; Arnold's *Sohrab and Rustum*; Longfellow's *The Courtship of Miles Standish*; Tennyson's *Gareth and Lynette*, *Lancelot and Elaine*, and *The Passing of Arthur*; Browning's *Cavalier Tunes*, *The Lost Leader*, *How They Brought the Good News from Ghent to Aix*, *Evelyn Hope*, *Home Thoughts from Abroad*, *Home Thoughts from the Sea*, *Incident of the French Camp*, *The Boy and the Angel*, *One Word More*, *Hervé Riel*, *Pheidippides*.

B. A special knowledge of the subject-matter, form and structure of the following works:

For 1909, 1910, 1911: Shakespeare's *Macbeth*; Milton's *Lycidas*, *Comus*, *L'Allegro*, and *Il Penseroso*; Burke's *Speech on Conciliation with America* or Washington's *Farewell Address* and Webster's *First Bunker Hill Oration*; Macaulay's *Life of Johnson*, or Carlyle's *Essay on Burns*.

Candidates who pass the examinations of the C. E. E. B. (College Entrance Examination Board) in English A and B will be given credit for English A and B.

**HISTORY.**

Each candidate is examined in *two* (2) of the four subjects, **A, B, C, D.**

Outline maps will be furnished for the questions in historical geography which will form a part of each paper.

Extra credit will be given for student note-books giving abstracts of collateral reading, notes of lectures, or digests of the text-book used. Such books should be certified by the candidate's teacher.

**A.** Ancient history, with special reference to Greek and Roman history, and including also a short introductory study of the more ancient nations and the chief events of the early Middle Ages, down to the death of Charlemagne (814).

**B.** Medieval and modern European history, from the death of Charlemagne to the present time.

**C.** English history, with due reference to social and political development.

**D.** American history. The questions will be upon the four following topics:

1. Historical geography. Questions are to be answered by drawing on an outline map certain geographical boundaries.

2. The Colonial period.

3. The Revolutionary period.

4. The Constitutional period. Under this topic will be a few questions on civil government.

Candidates who pass the examinations of the C. E. E. B. in History **A, B, C, D,** will be given credit for the corresponding subjects above, viz: History **A, B, C, D,** respectively.

**MATHEMATICS.****A. ELEMENTARY ALGEBRA.**

(i) *Algebra to Quadratics.*—The four fundamental operations for rational algebraic expression. Factoring, determination of highest common factor and lowest common multiple by factoring. Fractions, including complex fractions, ratio and proportion. Linear equations, both numerical and literal, containing one or more unknown quantities. Problems depending on linear equations. Radicals, including the extraction of the square root of polynomials and of numbers. Exponents, including the fractional and negative.

(ii) *Quadratics and Beyond.*—Quadratic equations, both numerical and literal. Simple cases of equations with one or more

unknown quantities, that can be solved by the methods of linear or quadratic equations. Problems depending on quadratic equations. The binomial theorem for positive integral exponents. The formulas for the  $n$ th term and the sum of the terms of arithmetical and geometric progressions, with applications.

**C. PLANE GEOMETRY.**—The usual theorems and constructions of good text-books, including the general properties of plane rectilinear figures; the circle, and the measurement of angles; similar polygons; areas, regular polygons, and the measurement of the circle. The solution of numerous original exercises, including loci problems. Applications to the mensuration of lines and plane surfaces.

Candidates who pass the examinations of the C. E. E. B. in Mathematics A (i), A (ii), and C will be given corresponding credit.

## II.

### ANCIENT AND FOREIGN LANGUAGES.

#### GREEK.

**NOTE.**—Questions on inflection, derivation, composition of words and on syntax will be asked under B and C.

**B. XENOPHON:** The first four books of the *Anabasis*.

**C. HOMER:** The first three books of the *Iliad* (omitting II, 484-end).

**F. PROSE COMPOSITION:** Continuous prose based upon Xenophon and other Attic prose of similar difficulty.

**G. SIGHT TRANSLATION OF PROSE** of no greater difficulty than Xenophon's *Anabasis*.

Candidates who pass the examinations of the C. E. E. B. in Greek B, C, F, G will be given corresponding credit.

#### LATIN.

**NOTE.**—Questions will be asked under B, C and D, on the inflection, derivation, and composition of words, on syntax, and on geography, history, and mythology.

**B. CÆSAR:** Four books of the *Gallic War*, preferably the first four.

**C. CICERO:** *Six Orations*. The order of preference is indicated in the following list: The four against Catiline, those of Archias, the Manilian Law, Marcellus, Sextus Roscius, Milo, Sestius, Liliarius, and the fourteenth Philippic.

**D. VERGIL:** The first six books of the *Aeneid*, with the scanning of the dactylic hexameter.

**M. TRANSLATION AT SIGHT:** Prose of no greater difficulty than the easier passages in Cicero's *Orations*.

**L. PROSE COMPOSITION:** The translation into Latin of continuous English prose based upon passages of moderate difficulty in Caesar or Cicero.

Candidates who pass the examinations of the C. E. E. B. in Latin **B, C, D, L, M** will be given corresponding credit.

#### FRENCH.

**A. ELEMENTARY FRENCH.**—Preparation for this examination should comprise (1) careful drill in pronunciation; (2) the rudiments of grammar, including the inflection of the regular and the more common irregular verbs, the plural nouns, the inflection of adjectives, participles, and pronouns; the use of personal pronouns, common adverbs, prepositions, and conjunctions; the order of words in the sentence, and the elementary rules of syntax; (3) abundant easy exercises, designed not only to fix in the memory the forms and principles of grammar, but also to cultivate readiness in the reproduction of natural forms of expression; (4) the reading of from 100 to 175 duodecimo pages of graduated texts, with constant practice in translating into French easy variations of the sentences read (the teacher giving the English), and in reproducing from memory sentences previously read; (5) writing French from dictation.

During the second year the work should comprise (1) the reading of from 250 to 400 pages of easy modern prose in the form of stories, plays, or historical or biographical sketches; (2) constant practice, as in the previous year, in translating into French easy variations upon the texts read; (3) frequent abstracts, sometimes oral and sometimes written, of portions of the text already read; (4) writing French from dictation; (5) continued drill upon the rudiments of grammar, with constant application in the construction of sentences; (6) mastery of the forms and use of pronouns, prenominal adjectives, of all but the rare irregular verb forms, and of the simpler uses of the conditional and subjunctive.

Suitable texts for the second year are: About's *Le roi des montagnes*, Bruno's *Le tour de la France*, Daudet's easier short tales, La Bédolliere's *Le Mère Michel et son chat*, Erckmann-Chatrian's stories, Foa's *Contes biographiques* and *Le petit Robinson de Paris*; Foncin's *Le pays de France*, Labiche and Martin's *La poudre*

*aux yeux* and *Le voyage de M. Perrichon*, Legouvé and Labiche's *La cigale chez les fourmis*, Malot's *Sans famille*, Mairet's *La tâche du petit Pierre*, Mérimée's *Colomba*, extracts from Michelet, Sarcey's *Le siège de Paris*, Verne's stories.

Candidates who pass the examinations of the C. E. E. B. in French A will be given corresponding credit.

Candidates offering French A must, in addition, offer French B.

#### GERMAN.

**A. ELEMENTARY GERMAN.**—The preparation for this examination should comprise: (1) Careful drill upon pronunciation; (2) the memorizing and frequent repetition of easy colloquial sentences; (3) drill upon the rudiments of grammar, that is, upon the inflection of the articles, of such nouns as belong to the language of every-day life, of adjectives, pronouns, weak verbs, and the more usual strong verbs; also upon the use of the more common prepositions, the simpler uses of the modal auxiliaries, and the elementary rules of syntax and word-order; (4) abundant easy exercises designed not only to fix in mind the forms and principles of grammar, but also to cultivate readiness in the reproduction of natural forms of expression; (5) the reading of from 75 to 100 pages of graduated texts from a reader, with constant practice in translating into German easy variations upon sentences selected from the reading lesson (the teacher giving the English), and in the reproduction from memory of sentences previously read.

During the second year the work should comprise: (1) The reading of from 150 to 200 pages of literature in the form of easy stories and plays; (2) accompanying practice, as before, in the translation into German of easy variations upon the matter read and also in the off-hand reproduction, sometimes orally and sometimes in writing, of the substance of short and easy selected passages; (3) continued drill upon the rudiments of the grammar, directed to the ends of enabling the pupil, first, to use his knowledge with facility in the formation of sentences, and, secondly, to state his knowledge correctly in the technical language of grammar.

The following reading recommended in the report of the Committee of Twelve will furnish matter from which selections may be made by the teacher: Andersen's *Märchen* and *Bilderbuch ohne Bilder*; Arnold's *Fritz auf Ferien*; Baumbach's *Die Nonna und Der Schwiegersohn*; Gerstäcker's *Germelshausen*; Heyse's *L'Arrabiata, Das Mädchen von Treppi*, and *Anfang und Ende*; Hillern's *Höher als die Kirche*; Jensen's *Die braune Erica*; Leander's *Träume*.

*mereien*, and *Kleine Geschichten*; Seidel's *Märchen*; Stökl's *Under dem Christbaum*; Storm's *Immensee* and *Geschichten aus der Tonne*; Zschokke's *Der zerbrochene Krug*; Hauff's *Das kalte Herz*. Among shorter plays the best available are perhaps Benedix's *Der Prozess*, *Der Weiberfeind*, and *Günstige Vorzeichen*; Elz's *Er ist nicht eifersüchtig*; Wichert's *An der Majorsecke*; Wilhelmi's *Einer muss heiraten*.

Candidates who pass the examinations of the C. E. E. B. in German A will be given corresponding credit.

Candidates offering German A must, in addition, offer German B.

### III.

## REPRESENTING SPECIAL SCIENTIFIC REQUIREMENTS FOR MEDICAL STUDIES.

### F. PLANE TRIGONOMETRY.

Definitions and relations of the six trigonometric functions as ratios; circular measurement of angles. Proofs of principal formulas; in particular for the sine, cosine, and tangent of the sum and the difference of two angles, of the double angle and the half angle, the product expressions for the sum of the difference of two sines or of two cosines, etc.; the transformation of trigonometric expressions by means of these formulas. Solution of trigonometric equations of a simple character. Theory and use of logarithms (without the introduction of work involving infinite series). The solution of right and oblique triangles, and practical applications.

### CHEMISTRY.

The required laboratory course shall cover the more important experiments described in such text-books as Richter, *Inorganic Chemistry*, or Remsen, *College Text-Book of Chemistry*, and in addition, work in qualitative analysis as covered by Medicus, *Qualitative Analysis*, or any equivalent book. The laboratory work in qualitative analysis shall include at least two analyses of each group of metals and of acids, and also analyses of at least six mixtures containing metals and acids of the various groups.

### PHYSICS.

The course of instruction in physics should include:

1. The study of one standard text-book for the purpose of obtaining a comprehensive and connected view of the more important facts and laws of elementary physics.

2. Instruction by lecture table demonstrations to be used mainly as a basis for questioning upon the general principles and laws of physics and their applications.

3. Individual laboratory work consisting of experiments requiring approximately the time of thirty double periods. Among the experiments performed by each student there should be thirty not very different from those in the appended list. All divisions of physics should be fairly represented.

The laboratory work forming an essential part of a general elementary course in physics should be conducted with the definite aim of teaching physics as a quantitative science and of training in accurate observation and thought.

Throughout the course especial attention should be paid to the common illustrations of physical laws and to their industrial applications.

In the solution of the numerical problem, the student should be encouraged to make use of the simple principles of algebra and geometry to reduce the difficulties of solution.

The following "Syllabus of Topics" for the classroom and "List of Experiments" for the laboratory presents in a general way the outline of work that may be covered to advantage in one year. It neither excludes other topics nor requires their complete fulfilment. Since no school would be expected to cover the entire course outlined, twice as many questions will be given on all examinations as any pupil will be required to answer.

Laboratory note-books, properly certified, must be submitted with diploma or certificate.

#### SYLLABUS OF TOPICS IN PHYSICS.

1. The Metric System; the three states of matter.
2. Dynamics of solids; of liquids; of gases.
3. Heat.
4. Sound.
5. Light.
6. Magnetism.
7. Static Electricity.
8. Current Electricity.

#### LIST OF EXPERIMENTS.

##### *Mechanics and Hydrostatics:*

1. Weight of unit volume of a substance, prism or cylinder.
2. Lifting effect of water upon a body entirely immersed in it.

3. Specific gravity of a solid body that will sink in water.
4. Specific gravity of a block of wood by use of a sinker.
5. Weight of water displaced by a floating body.
6. Specific gravity of a liquid; two methods (bottle and displacement methods).
7. Specific gravity of a liquid by balancing columns.
8. Compressibility of air: Boyle's law.
9. Density of air.
10. The straight lever (first class): equilibrium of 3 parallel forces in one plane.
11. Center of gravity and weight of a lever.
12. Principle of moments, four or more parallel forces.
13. Three concurrent forces in one plane: parallelogram of forces.
14. Four forces at right angles in one plane.
15. Coefficient of friction between solid bodies,—on a level and by sliding on an incline.
16. Efficiency test of some elementary machine, either pulley, inclined plane, or wheel and axle.
17. Laws of the pendulum.
18. Laws of accelerated motion.

*Heat:*

19. Study of a mercury thermometer: relation between pressure of steam and its temperature.
20. Linear expansion of a solid.
21. Increase of pressure of a gas heated at constant volume.
22. Increase of volume of a gas heated at constant pressure.
23. Heat of fusion of ice.
24. Study of the temperature of solidification: acetamide.
25. Heat of vaporization of water.
26. Determination of the dew-point.
27. Specific heat of a solid.

*Sound:*

28. Velocity of sound.
29. Wave-length of sound.
30. Number of vibrations of a tuning-fork.

*Light:*

31. Use of photometer.
32. Images in a plane mirror.
33. Images formed by a convex mirror.

34. Images formed by a concave mirror.
35. Index of refraction of glass.
36. Index of refraction of water.
37. Focal length of a converging lens.
38. Conjugate foci of a lens.
39. Shape and size of a real image formed by a lens.
40. Virtual image formed by a lens.

*Electricity and Magnetism:*

41. Lines of force near a bar magnet.
42. Study of a single-fluid voltaic cell.
43. Study of a two-fluid voltaic cell.
44. Lines of force about a current bearing conductor.
45. Resistance measured by Wheatstone's bridge: specific resistance of copper.
46. Laws of electrical resistance of wires: various lengths, cross-section and multiple arc.
47. Temperature—coefficient of resistance in copper.
48. Battery resistance. Combination of cells.
49. Study of induced currents.
50. Efficiency of a small electric motor.

**GENERAL BIOLOGY OR GENERAL ZOOLOGY.**

Either General Biology or General Zoölogy may be offered for admission; preparation in either of these subjects presupposes a full year's course of five hours per week, or its equivalent, not less than two-thirds of the time being devoted to laboratory work, guided by definite directions; this should be supplemented by a study of some modern elementary text-book, such as the following. T. Jeffery Parker, *Elements of Biology*; Sedgwick and Wilson, *General Biology*; Parker and Parker, *Practical Zoölogy*; Linville and Kelly, *General Zoölogy*.

The scope of the course should be similar to that outlined in the text-books named. Each student should keep a laboratory note-book in which to enter from day to day a record of the laboratory work done; this record should consist of carefully labelled outline drawings of the chief structure studied, and accurate notes of all observations, experiments or demonstrations which cannot be recorded by drawings. This note-book, properly certified by the teacher, must be submitted by the applicant for admission. The requirements here outlined are essentially similar to those specified

by the College Entrance Examination Board for the subject of Zoölogy.\*

#### IV.

#### REPRESENTING A MINIMUM OF WORK IN A FRESHMAN COLLEGIATE COURSE IN ARTS AND SCIENCE.

(A total of 12 units.)

331. *Composition*.—Weekly themes on assigned subjects, popular and literary, written in class and corrected and commented on by the instructor in charge.
332. *English Language*.—An historical treatment of the English Language. Recitations, followed by lectures on the English vocabulary, the nature of language, the history of the alphabet and allied subjects. Lounsbury's *History of the English Language*.
334. *History of English Literature*.—From Anglo-Saxon times to the present day. Lectures, collateral reading, preparation of papers.
362. *Political Parties, Leaders, Issues, Platforms, 1783-1877*.—The system followed is the same as in 361; but the subject of the lectures is political history, and not that covered in 361. An elementary knowledge of our political history is expected, the work being chiefly with the sources.
363. *American Colonial and Revolutionary History*.—The beginnings of the American nation; European inheritance; development of American institutions; expansion of English colonies, rivalry of French and English; underlying causes of the Revolution; growth toward independence and union; formation and dissolution of the Confederation. Lectures, collateral reading, map work, and written exercises. An outline is prepared for the class.
364. *Medieval History*.—The history of Europe from 395 to 1300. The disintegration of the Roman Empire; the German tribes and their settlement in the Empire; the Church and its influence; Charlemagne; feudal institutions;

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\* For detailed information of the requirements specified by the College Entrance Examination Board, candidates are referred to Thomas S. Fiske, Ph. D., Post Office Substation 84, New York City.

the crusades; the Church at the end of the Middle Ages; commerce and the rise of cities; rise of the modern nations. Text-book, lectures and required reading.

365. *Europe in the Nineteenth Century*.—Europe after the overthrow of Napoleon; the restorations and reaction; the struggle for constitutional government and the rights of nationality; the Greek revolution; the revolutions of 1830 and 1848; the Crimean war and the Eastern Question; Cavour and Italian unification, Bismarck and the founding of the German Empire; France under the Third Republic; the dual monarchy of Austria-Hungary; the expansion of Russia and the far Eastern Question; the partition of Africa, and the main characteristics of contemporary European history. Text-book, lectures and required readings.

461. *Solid Geometry*.—Schultze and Sevenoak's *Geometry*, Books VI, VII, VIII.

463. *Algebra*.—Fine's *College Algebra*.

331. Lysias, *Selected Orations*; Plato, *Apology* and *Crito*; Euripides, *Iphigenia among the Taurians*. Greek Composition.

431A. Livy.

431B. Cicero, *De Amicitia*. Roman history and antiquities.

431C. Livy and Ovid, Selections.

432A. Cicero, *De Senectute* and *Letters*. Outline of Latin Literature.

432B. Tibullus.

432C. Sallust.

#### FRENCH.

*Course 282.—INTERMEDIATE FRENCH (C. E. E. B., French B.)*.\*—Preparation for this examination should comprise the reading of from 400 to 600 pages of French of ordinary difficulty, a portion to be in the dramatic form; constant practice in giving French paraphrases, abstracts or reproductions from memory of selected portions of the matter read; the study of a grammar of modern completeness; writing from dictation.

Suitable texts are: About's stories, Augier and Sandea's *Le gendre de M. Poirier*, Béranger's poems, Corneille's *Le Cid* and *Horace*, Coppée's poems, Daudet's *La Belle-Nivernaise*, La Brète's

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\* For the requirement in Elementary French (French A) see p. 390.

*Mon oncle et mon curé*, Madame de Sévigne's letters, Hugo's *Hernani* and *La chute*, Labiche's plays, Loti's *Pêcheur d'Islande*, Mignet's historical writings, Molière's *L'avare* and *Le bourgeois gentilhomme*, Racine's *Athalie*, *Andromaque* and *Esther*, George Sand's plays and stories, Sandea's *Mademoiselle de la Seiglière*, Scribe's plays, Thierry's *Récits des temps métrovingiens*, Thiers's *L'expédition de Bonaparte en Egypte*, Vigny's *La canne de jonc*, Voltaire's historical writings.

#### GERMAN.

*Course 322.—INTERMEDIATE GERMAN* (C. E. E. B., German B).\* —The preparation for this examination should comprise, in addition to the elementary course, the reading of about 400 pages of moderately difficult prose and poetry, with constant practice in giving, sometimes orally and sometimes in writing, paraphrases, abstracts, or reproductions from memory of selected portions of the matter read; also grammatical drill upon the less usual strong verbs, the use of articles, cases, auxiliaries of all kinds, tenses and modes (with special reference to the infinitive and subjunctive), and likewise upon word-order and word-formation.

The intermediate course is supposed to be the elementary course, plus one year's work at the rate of not less than four recitations a week. Suitable reading matter for the third year can be selected from such works as the following: Freytag's *Die Journalisten* and *Bilder aus der deutschen Vergangenheit*—for example, *Karl der Grosse*, *Aus der Kreuzzügen*, *Doktor Luther*.

#### ADVANCED STANDING IN SUBJECTS.

Any graduate in Arts or Science of a college recognized by this University who has completed any of the studies of the first year of the Medical Course, viz: Physiological Chemistry or Anatomy (excepting the Central Nervous System and the Organs of Special Sense), and who has passed satisfactorily the examination given by the professor of the respective branch in this medical school, may be excused from that portion of the study given in the first year of the course, provided that he utilize the time scheduled for that study in advanced work in Chemistry or Anatomy, according to his preference and capabilities; or in anticipating work of the second year in so far as the roster may permit.

\* For the requirement in Elementary German (German A) see p. 391.

### ADMISSION TO ADVANCED STANDING.

Candidates for admission to advanced standing will be required to meet the admission requirements which were in effect at the time the class to which they are entitled to enter was admitted, in addition to the examination in the subjects italicized below. Results of examinations in these several subjects which may have been passed at other medical schools will not be accepted in lieu of the requirements here prescribed.

Examinations for admission to advanced standing for the session 1909-10 may be taken in the new Medical Laboratories, beginning Monday, May 17, 1909, at 9 A. M., or Monday, September 20, 1909, at 2 P. M. All examinations must be passed before the beginning of the regular session, September 24, 1909, at 8 P. M.\*

Candidates who have attended one course in a recognized medical school (not Homœopathic or Eclectic) in which the required annual session is not less than eight months in length, are admitted to the SECOND-YEAR Class upon passing a satisfactory examination in *General and Physiological Chemistry, Anatomy* (excepting the *Central Nervous System* and the *Organs of Special Sense*), *Pathology* and *Materia Medica* and *Pharmacy*.

Candidates who have attended two courses in a recognized regular medical school in which the required annual session is not less than eight months in length, are admitted to the THIRD-YEAR Class upon passing a satisfactory examination in *General and Physiological Chemistry, Materia Medica* and *Pharmacy, Pathology, Physical Diagnosis, Bacteriology*, and the entire subjects of *Anatomy* and *Physiology*.

Candidates who have attended three courses in a recognized regular medical school in which the required annual session is not less than eight months in length, are admitted to the FOURTH-YEAR Class upon passing a satisfactory examination in *General and Physiological Chemistry, Materia Medica* and *Pharmacy, Bacteriology, Physical Diagnosis, Anatomy, Physiology, Applied Anatomy, Pathology and Gross Pathology, Therapeutics, Medicine, Surgery, Obstetrics, and Ophthalmology*.

Graduates of recognized regular medical schools, in which the

\* Students from other colleges admitted to the Second-year Class, who have not had instruction in Practical Normal Histology, Physiological Chemistry and in *Materia Medica* and *Pharmacy*, will be required to make up such deficiency by taking a special course. Students admitted to the Third-year Class will be required to make up deficiencies in Practical Normal Histology, Physiological Chemistry, Bacteriology, and in Practical Pathological Histology.

required annual session is not less than eight months in length, and in which four years' attendance upon instruction is required to obtain the degree in Medicine, are admitted to the FOURTH-YEAR Class with the understanding that they pass examinations in *Obstetrics, Therapeutics, Pathology* and *Gross Pathology*, either at the beginning or at the end of the fourth year, in addition to the regular examinations of that year.

## UNDERGRADUATE INSTRUCTION.

### FIRST PERIOD.

The course of instruction extends over a period of four years, with one session in each year, beginning on the last Friday of September and ending on the third Wednesday in June.

The course may be said to be divided into two periods of two years each: the first period devoted to the fundamental medical sciences, Chemistry, Anatomy, Physiology, and Pathology; the second period to the clinical subjects, Medicine, Surgery, Obstetrics and the specialties.

The subjects of the first two years have been arranged according to a modification of the concentration system. By this system the student is enabled to concentrate his energy upon one or two subjects, and must master these before he is allowed to continue the course. Thus the first year is devoted chiefly to anatomy, including embryology, normal histology, osteology, and to physiological chemistry.

The subjects of the second year follow in logical sequence those of the year preceding. Having been grounded in the structure of the human subject in a state of health, and having familiarized himself with the chemistry of normal tissues and body fluids, the student enters upon the study of the functions which the tissues of the body perform in a state of health, and the disturbance of functions and alterations of structures that are manifested in disease. The time of the second year is thus given over almost wholly to physiology, pathology and bacteriology. In addition to these the work of the second year includes a course in Physical Diagnosis.

Instruction upon the subjects of the first two years is almost entirely practical, so that the greater part of the student's time is spent in the laboratories. In the new Laboratories of Pathology, Physiology and Pharmacology, which were opened in June, 1904, the students of this department are afforded unsurpassed facilities for practical work in these fundamental subjects.

### SECOND PERIOD.

With the beginning of the third year the student enters upon the second period, which covers the third and fourth years, and is devoted almost exclusively to instruction in the so-called clinical

subjects—Medicine, Surgery, Obstetrics and the specialties. There is no sharp dividing line between the work of the third and fourth years, so that the courses in the clinical subjects may be said to cover a period of two years.

From a glance at the tabular representation of the hours of instruction for the third and fourth years (later pages), it will be seen that arrangements have been made to keep the student fully occupied throughout each day. No especial opportunities are offered the student to engage in special lines of work before he graduates. In point of fact, any desire to specialize before graduation is rather discouraged. It has always been the object and aim of this institution to prepare its students for the practice of general medicine, not to graduate them as "specialists." *Its policy has been to offer the student a well-graded, well-proportioned and comprehensive course*, so that upon his graduation he stands prepared to *practice* medicine. Should he decide to take up a specialty or to engage in teaching or investigation after graduation, he will be the better prepared by his broad education, and still better prepared if he has had several years of clinical experience.

The methods of instruction are varied, but mostly practical. The latter include ward visits, ward classes, clinical conferences and practical observation in the wards and out-patient department of the University Hospital. Didactic lectures, general clinics and recitations have been found indispensable, but play a less conspicuous part in the course.

The facilities for instruction are abundant. It is possible to offer to each student opportunities to come into personal contact under proper supervision with a large and varied series of cases. The University Hospital, with its capacity of 315 beds, is operated exclusively for the benefit of the Department of Medicine. Adjoining the University campus is the Philadelphia Hospital, with a capacity of 1,000 beds, where the wards are open to both teachers and students throughout the year.

In addition to these, extramural teaching is conducted in the Children's and Pennsylvania Hospitals by members of the teaching staff. A voluntary course upon the contagious diseases, conducted at the Municipal Hospital is offered to the members of the Graduating Class.

#### ANATOMY.

GEORGE A. PIERSOL, M. D., ..... *Professor of Anatomy.*  
GWILYM G. DAVIS, M. D., M.R.C.S.  
(Eng.), *Associate Professor of Applied Anatomy.*

GEORGE FETTEROLF, M. D., .....	Demonstrator of Anatomy.
WILLIAM H. F. ADDISON, M. B., ...	Demonstrator of Histology and Embryology.
WALTER S. CORNELL, M. D., .....	Demonstrator of Osteology.
J. REX HOBENSACK, M. D., .....	
JOHN J. ROBRECHT, M. D., .....	
RICHARD F. GERLACH, M. D., .....	
WM. E. QUICKSALL, M. D., .....	
HOWARD A. SUTTON, M. D., .....	Assistant Demonstrators of Anatomy.
WALTER S. CORNELL, M. D., .....	
WARREN C. GOODWIN, M. D.,.....	
PENN-GASKELL SKILLERN, M. D.,...	
NATE GINSBURG, M. D.,.....	
GEORGE H. CHAMBERS, M. D.,.....	Assistant Demonstrators of Histology.
HAROLD B. WOOD, M. D.,.....	
GEORGE MORRIS PIERSOL, M. D.,....	Prosector to Professor of Anatomy.
ASTLEY P. C. ASHHURST, M. D., ...	Prosector to Associate Pro- fessor of Applied Anat- omy.
G. MASON ASTLEY, M. D.,.....	Voluntary Assistant in Anatomy.
ISAAC WELSH BROWN, M. D.,.....	Voluntary Assistant in Anat- omy.
ERWIN F. FABER, .....	Artists.
LOUIS SCHMIDT, .....	

Of the following courses in Anatomy, I to XII, inclusive, are required of candidates for the degree of Doctor of Medicine. All are completed during the first year, except Courses III and XI, which are completed during the second year, and Course IV, completed during the third year. Courses XIII to XVII are not required, but may be taken by students who have had satisfactory preparatory training.

I. SYSTEMATIC ANATOMY, INCLUDING CYTOLOGY, GENERAL EMBRYOLOGY, GENERAL HISTOLOGY, OSTEOLGY, AND MYOLOGY. *Professor Piersol.*—October 1 to February 1; four hours weekly.

II. SYSTEMATIC ANATOMY OF THE ORGANS. *Professor Piersol.*—February 1 to May 18; four hours weekly.

III. ANATOMY OF THE CENTRAL NERVOUS SYSTEM AND ORGANS OF SPECIAL SENSE. *Professor Piersol.*—February 1 to May 15; each section of class three hours weekly.

IV. COURSE IN APPLIED ANATOMY. *Dr. Davis*.—October 1 to May 15; each section of class one hour weekly.

V. LABORATORY COURSE IN GENERAL HISTOLOGY. *Dr. Addison and assistants*.—October 1 to December 20; each section two mornings weekly.

VI. LABORATORY COURSE IN THE HISTOLOGY OF ORGANS. *Dr. Addison and assistants*.—January 1 to April 1; each section two mornings weekly.

VII. LABORATORY COURSE IN EMBRYOLOGY. *Dr. Addison and assistants*.—April 1 to May 15; each section two mornings weekly.

VIII. OSTEOLOGY. *Dr. Cornell*.—October 1 to February 1; two hours weekly.

IX. LABORATORY COURSE IN OSTEOLOGY. *Drs. Cornell and Sutton*.—October 1 to February 1; each section eleven hours for seven weeks.

X. PRACTICAL STUDY OF THE EXTREMITIES BY DISSECTION. *Dr. Fetterolf and assistants*.—October 1 to May 15; each section two hours daily for fourteen weeks.

XI. PRACTICAL STUDY OF THE HEAD, NECK, THORAX AND ABDOMEN. *Dr. Fetterolf and assistants*.—October 1 to May 15; each section two hours daily for fourteen weeks.

XII. DEMONSTRATIONS. October 9 to May 15; two hours weekly.

XIII. SPECIAL COURSE ON ANATOMY OF SENSE ORGANS. *Professor Piersol*.—October 15 to December 15; Wednesday mornings.

XIV. SPECIAL COURSE IN ANATOMY OF FRACTURES AND LUXATIONS.—*Dr. Davis and assistant*.

XV. ADVANCED LABORATORY COURSE IN VERTEBRATE EMBRYOLOGY. *Professor Piersol and Dr. Addison*.—October 15 to May 1; mornings.

XVI. LABORATORY COURSE IN MICROSCOPICAL TECHNIQUE. *Professor Piersol and Dr. Addison*.—April 1 to May 15; three mornings weekly.

XVII. ADVANCED WORK AND ORIGINAL INVESTIGATION. *Professor Piersol*.—October 15 to May 15.

Courses I and II, four lectures a week throughout the session present systematically the principles, as well as details, of human anatomy, including structure and development. Beginning with

the structure and life history of the cell, the fundamental processes of development are traced as far as the evolution of the general body-form. The tissues in general, and the connective substances in particular as an introduction to osteology, next claim attention. Succeeding the study of the human skeleton, including the joints, the muscular system is presented. Consideration of the digestive tract and its appendages, and of the respiratory organs, is followed by that of the genito-urinary organs. The discussion of the vascular and nervous systems is next undertaken; the detailed study of the cerebro-spinal axis, and the organs of special sense, however, being deferred until the second year. Especial pains are taken to impress the broader morphological significance of the details of human anatomy. These courses are exceptionally well illustrated by means of charts, lantern, models, museum preparations and fresh dissections, the unusual resources of the Wistar Institute of Anatomy and Biology being additionally available, not only for class-instruction, but also for individual study.

Courses V and VI occupy two mornings each week, until April 1, during which time the student is required to mount, study and draw preparations of all of the important tissues and organs of the human body, as well as to learn the methods employed in their preparation.

Course VII is devoted to the mounting and study of series of chick and mammalian embryos. The laboratory is equipped with excellent microscopes of recent model, and supplied with the most approved apparatus for histological and embryological work.

Course IX, in the osteological laboratory, is conducted for a period of forty-two days, two and one-quarter hours daily, for each section into which the class is divided. The exercises include the detailed study of the skeleton, each student being provided with bones which he is required to draw, noting the important features and principal muscular attachments. The joints are also studied on finished dissections. Bones are loaned to students upon conditions similar to those governing the issue of books from a library.

Courses X and XI form a most important part of the first and second year work, every student being required to carefully dissect and pass practical examination upon the cadaver. The class is divided into sections, each of which works at least two hours daily for two periods of forty-two days each, under the close supervision of the Demonstrator of Anatomy and his assistants. Excellent and abundant dissecting material is assured by the improved

methods of preservation and the facilities for cold storage. Opportunity for additional work is afforded to students who desire to devote more time to practical anatomy.

Course III, continuing the systematic instruction in the second year, is given in sections, two mornings each week, after February 1. These hours are devoted to teaching each student individually the details of the central nervous system and the organs of special sense. A generous supply of dissections, microscopical preparations and models insures adequate illustration of these subjects. Careful dissection of the brain by each student under the immediate direction of the Professor of Anatomy and his assistants is a feature of the course. Permanent demonstrations of the anatomy of the central nervous system are available at all times for individual study and review. In addition to the tests held at the completion of his dissections, each student is required to pass on the cadaver an examination, held by the Professor of Anatomy, covering the entire body, as a preliminary to the written examination at the end of the second year.

Course IV is a continuation of the study of anatomy, but from the standpoint of its application, and not as an abstract science. The course embraces surface anatomy, the outlines of the organs, the position of the joints, significance of bony points, muscular swells, the position and means of recognizing the various nerves and arteries; the influence of the muscles in fractures; the construction of joints in reference to luxations; a knowledge of the parts incised in amputations; how the parts influence and direct the progress of abscesses; a knowledge of the lymphatics in reference to pyogenic and carcinomatous infections; a knowledge of the position and relation of the abdominal organs necessary for diagnostic and operative purposes; also those of the chest; cerebral localization, paralysis, etc., and innumerable other facts. Attention is given to the relation of the various tissues and organs to each other, so that the operations on those parts may be understood. It is the object of the course to present to the student the subject of anatomy in such manner as to enable him to utilize it in forming diagnoses and applying methods of treatment.

Instruction is given by demonstrations. These embrace the living and dead body and anatomical preparations. Special dissections and preparations are made to illustrate and explain fractures, dislocations, amputations, ligation of arteries, the position and relation of organs by frozen sections, etc., and also by injections of wax, the affections of the joints, palmar and other abscesses, etc.

The class is divided into three sections, each of which attends one hour a week.

Two minor examinations are given during the term and a final one, both written and practical, at the completion of the term.

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### BACTERIOLOGY AND HYGIENE.

ALEXANDER C. ABBOTT, M. D.,\* PEPPER *Professor of Hygiene, and Bacteriology.*

DAVID H. BERGEY, M. D., . . . . . *Assistant Professor of Bacteriology.*

NATHANIEL GILDERSLEEVE, M.D., *Associate in Bacteriology.*

HARRY A. SCHATZ, M. D., . . . . . *Second Assistant in Bacteriology.*

SYLVESTER J. DEEHAN, M. D., . . . . . *Third Assistant in Bacteriology.*

### BACTERIOLOGY.

I. LECTURES. *Professor Bergey.*—A course of lectures preparatory to the practical work of the second-year students is given, one lecture weekly, during the first term. This course comprehends those elementary phases of the subject with which the student should be familiar at the time he begins his practical work.

II. LABORATORY COURSE. *Drs. Bergey and Gildersleeve.*—The course of lectures is followed by the laboratory exercises. These begin February 1, and continue until the end of the year.

The number of hours given to the practical work in this branch is about eighty to each student of the Second-year Class. During this time they receive instruction in the use of the microscope in bacteriological work; the methods of cultivating bacteria and of isolating them in pure cultures; the steps necessary to the identification of particular species of bacteria; the relation of bacteria to infection; and the methods of sterilization and disinfection. Such students as demonstrate ability to advance beyond the class work are given the opportunity to do so, and are encouraged to pursue such studies providing the latter do not interfere with hours assigned to other subjects.

The course in detail covers the following subjects:

1. Apparatus employed—sterilizers, incubators, pressure regulators, thermostats, etc. •

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\* Absent on Public Business.

2. Culture media, methods of preparation, sterilization methods.
3. Characteristics of cultures of bacteria in general and of special forms.
4. Methods of obtaining, from mixtures of different bacteria, individual species in pure cultures.
5. Microscopic technique. Use and care of instruments, staining from cultures, section cutting, and staining and mounting of tissues.
6. Pathogenic bacteria isolation, identification and inoculation.
7. Disinfection, thermal and chemical, methods and apparatus, modes of testing efficiency.
8. Bacteriological investigation of water.
9. Bacteriological investigation of air.
10. Bacteriological investigation of soil.

#### HYGIENE.

III. LECTURES. *Professor Abbott.*—The teaching in Hygiene consists of a course of didactic lectures to the Fourth-year Medical students, and of practical exercises in the laboratory. The didactic course is compulsory upon all students receiving the degree of Doctor of Medicine, while the practical course is voluntary.

The lectures are given twice weekly, from February 1 until the end of the term. They cover the following topics of general sanitary importance:

A consideration of the factors concerned in the direct causation of disease, and the manifold conditions of life that indirectly favor the occurrence of disease among individuals, groups of individuals and communities.

A brief sketch of the important transmissible and epidemic diseases, embracing a discussion of their modes of transmission, portals of infection, geographical and seasonal distribution and the approved methods of their prevention.

A consideration of prophylaxis in general, embracing disinfection and disinfectants, protective vaccination and the anti-toxic state, the disposal of the dead after infectious diseases, and quarantine.

The atmosphere, from the chemical, physical, and biological standpoints; the air of enclosed spaces; the problems of ventilation and heating; the various pollutions of the atmosphere, such, for instance, as those from the soil, from industries, from sewers, etc., and their influence on health and disease.

Water—its sanitary significance; the characteristics of waters from various sources and their suitability to domestic needs; the pollutions to which waters from different sources are liable; the biological significance of these pollutions; interpretations of the results of analyses; natural and artificial purification of waters; the relation of water to health and disease.

Sewage—the part taken by the soil and its constituents in the disposal of organic waste; the characteristics of sewage from different sources; the various methods for the disposal of sewage; the influence of sewage disposal upon the health of communities.

**IV. PRACTICAL COURSE.** *Professor Abbott and Dr. Bergey.*—The following subjects, arranged especially for the needs of those students intending to enter upon the practical pursuit of sanitary work, are taken up:

1. The atmosphere, climate and meteorological observations and records, chemical analysis, bacteriological investigation, methods of investigation, methods of ventilation and heating.
2. Water—physical, chemical and bacteriological investigation of water-supplies; methods of obtaining samples; qualitative and quantitative analysis for impurities; collection, storage and purification of water intended for domestic use; effects of filters, aeration, etc.
3. Sewage disposal, sewers, house drainage and the air of sewers.
4. Disposal of refuse, cremation of garbage, etc.
5. Soils and building sites, physical, chemical and bacteriological investigation, soil and moisture, ground air.
6. Foods—adulteration, milk and meat inspections.
7. Clothing—microscopic examination, poisonous dyes.
8. Management of contagious diseases. Practical tests of different methods of disinfection, chemical and thermal; notification, isolation and quarantine.
9. Vital statistics, registration and methods of tabulation.
10. Offensive and dangerous trades.

**V. ORIGINAL INVESTIGATION.** In addition to the foregoing set courses, facilities are offered by the Laboratory for special work. Students and graduates of this school or elsewhere will find opportunities for advanced work in any of the subjects properly coming within the scope of the Laboratory. Arrangements for such work can be made by correspondence with the Director of the Laboratory.

**COURSES IN PUBLIC HEALTH.**

The authorities of the University of Pennsylvania realize the efforts which are being made in communities throughout the country to obtain officials who have had some special training in matters pertaining to public health. Each year the demand for men of this type (either as chiefs of departments or in some subordinate position) is increased, and at the present time there is a lack of men qualified to fill such positions. To meet the needs of such instruction, the University has introduced into its curriculum a course in public health, which includes instruction under the following headings:

**SANITARY ENGINEERING.** Including the subject of water supplies, sewerage systems, street cleaning, disposal of waste, etc.

**SANITARY LEGISLATION.** A study of the movement for sanitary reform, and of the laws enacted relating to public health, and the methods of enforcement employed in Great Britain and the United States.

**INSPECTION OF MEAT, MILK AND OTHER ANIMAL PRODUCTS.** The methods of preparation and preservation of the same, the conduct of dairies, creameries, etc., and demonstrations of the diseases of animals transmissible to man.

**THE SANITARY ENGINEERING OF BUILDINGS.** Including demonstrations of systems of heating, ventilation, plumbing and drainage, the study of plans, etc.

**SOCIAL AND VITAL STATISTICS IN THE UNITED STATES.** An examination of statistical methods and their results, with special reference to vital statistics and to city populations.

**PRACTICAL METHODS USED IN SANITARY WORK.** Including water, air and milk analyses, studies in ventilation and heating, investigation of the soil, methods of disinfection, sterilization, etc. (This is purely laboratory instruction.)

**GENERAL HYGIENE.** As applied to the community, including lectures upon the causation of disease—exciting and predisposing, methods of prevention—including isolation, quarantine, natural and acquired immunity, protective inoculation, vaccination, and the antitoxic state, methods of house disinfection, the means employed, suggestions for the organization of sanitary work, the influence of water supplies and sewage disposal on the public health, etc.

**PERSONAL HYGIENE.** Including the physiology of exercise, the adaptation of exercise to the various physical requirements, the use of exercise for the prevention and correction of deformities, the methods of examination and record keeping, the routine physical examination of growing children and the relation of air, food, bathing, etc., to health and development; the hygiene of the school room.

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### PHYSIOLOGICAL CHEMISTRY AND TOXICOLOGY.

JOHN MARSHALL, M. D., *Professor of Chemistry and Toxicology.*  
NAT. SC. D., LL. D.,  
DANIEL W. FETTEROLF, M. D., *Demonstrator of Chemistry.*  
WILLIAM H. WELKER, PH. D., *Demonstrator of Physiological Chemistry.*  
LEON A. RYAN, PH. D., *Assistant Demonstrator of Chemistry.*

Instruction in Physiological Chemistry for the degree in Medicine is confined to the first year of the course, and consists of lectures and laboratory work.

I. LECTURES. *Professor Marshall.*—During the period from February 1 until the end of the session three lectures are given weekly in which the important parts of the subjects are treated.

II. LABORATORY WORK. *Drs. Welker, Fetterolf and Ryan.*—During the period from February 1 until the end of the session six hours' attendance in the laboratory in two periods of three hours each in each week is required of each student. The course consists of studies of carbohydrates, proteins, the solid tissues, salivary, pancreatic, and gastric digestion, bile, biliary concretions, milk, blood, stomach contents, normal and pathological urine, feces, general food analysis, and examination of pathological fluids and solids whenever such material is available.

Toxicology: Examination for volatile poisons, alkaloids, and metallic poisons placed in organic tissues by the instructor, detection of blood-stains, spectroscopic and chemical examination of haemoglobin and its various derivatives.

III. ADVANCED LABORATORY COURSE IN PHYSIOLOGICAL CHEMISTRY open to persons sufficiently prepared to undertake such work.

IV. ADVANCED LABORATORY COURSE IN URINE ANALYSIS open to persons qualified by previous preparation to undertake such work.

V. LABORATORY COURSE IN TOXICOLOGY open to persons qualified by previous training in chemical technique to undertake such work.

VI. RESEARCH WORK for those qualified by previous training to undertake it.

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### PHYSIOLOGY.

EDWARD T. REICHERT, M. D., . . . . .	<i>Professor of Physiology.</i>
EDWARD LODHOLZ, M. D., . . . . .	<i>Demonstrator of Physiology.</i>
REUBEN A. BOGLIA, M. D., . . . . .	}
CHARLES J. HUNT, M. D., . . . . .	
J. GARRETT HICKEY, D. D. S., . . . . .	
ARDREY WHIDDIN DOWNS, M. D., . . . . .	
DAVID M. P. MAGEE, M. D., . . . . .	<i>Assistants in Physiology.</i>

The instruction in Physiology embraces systematic courses of lectures, practical work by the student, demonstrations and conferences given during and extending throughout the second year. The students, therefore, before entering upon their work in this department, have been trained in Chemistry, Anatomy and Normal Histology.

I. LECTURES. *Professor Reichert.*—Four lectures a week on the general subject of Nutrition, from October 1 to February 1.

II. LECTURES. *Professor Reichert.*—Four lectures a week on the Heat Mechanism and the Nervous and Muscular Systems, from February 1 to May 15.

The lectures are copiously illustrated by tables, charts, diagrams and drawings, this being supplemented and considerably extended by the courses of instruction in the demonstration-room and laboratory.

III. STUDENTS' LABORATORY WORK, IN ILLUSTRATION AND EXTENSION OF COURSE I. *Professor Reichert, Dr. Lodholz and assistants.*

IV. STUDENTS' LABORATORY WORK, BEARING A SIMILAR RELATION TO COURSE II. *Professor Reichert, Dr. Lodholz and assistants.*

The course of practical work has been carefully and systematically planned, chiefly upon the *inductive* method of instruction,

and from seven to ten hours a week are assigned to each student for this work, together with demonstrations and conferences. The main objects sought in the laboratory are: the illustration of the lectures by the most impressive methods; the supplementation of collateral work to further impress important fundamental facts and broaden their application; the training in the use of instruments of precision, with especial reference to the use of apparatus in clinical and experimental medicine; the cultivation of the individual's powers of observation and deduction; the encouragement of accuracy of expression and method, of collateral work, and the co-ordination of facts.

The instruction in the practical work is given under the direction of the Professor of Physiology by the Demonstrator and his assistants. Each student is assigned a table and the necessary apparatus, and works under the direct supervision of the teaching staff. He is directed in technique and in what to observe, but he is self-dependent as to his results and conclusions, which he must present for examination in the form of "graphic records" and written reports at the end of each exercise.

V and VI. DEMONSTRATIONS. *Dr. Lodholz and assistants.*—Two corresponding series of demonstrations, which take the place of practical work when the latter is of a character too difficult or otherwise undesirable for the student to pursue; as, for instance, work involving the use of complicated or very expensive apparatus, the employment of mammals, etc. These demonstrations are given in their proper relation to other instruction in physiology.

VII. CONFERENCES. *Dr. Lodholz and assistants.*—Conferences, which cover the subject-matter of the lectures, are held at appropriate times.

VIII. JOURNAL CLUB. Recent work in Physiology is reported by the members of the department, and by those actively engaged in research and advanced work in the laboratories.

IX. SEMINARY. Problems under investigation in the department are introduced for the mutual advantages of discussion. Conducted by Professor Reichert and the staff of the department.

X. GRADUATE COURSES. *Professor Reichert.*—These courses are arranged to suit the requirements of those presenting themselves for the work. Rooms and apparatus are placed at the disposal of such students, and every facility is offered for the prosecution of research.

**XI. ELECTIVE COURSES IN ADVANCED PHYSIOLOGY.** *Professor Reichert.*—These are offered to students of the third and fourth years in Medicine. The intention is to give to those who may desire it an opportunity to continue the laboratory work of the previous year in ways that are impossible with large classes, and as a foundation for the prosecution of research.

**XII. RESEARCH.** The laboratory offers all the advantages of its facilities and equipment for the investigation of problems in Physiology. This may be arranged for at any time by communicating with Professor Reichert.

#### PATHOLOGY.

ALLEN J. SMITH, M. D., .....	<i>Professor of Pathology.</i>
LEO LOEB, M. D., .....	<i>Assistant Professor of Experimental Pathology.</i>
HOWARD T. KARSNER, M. D., .....	<i>Demonstrator of Pathology.</i>
WILLIAM T. CUMMINS, M. D., .....	} Assistant Demonstrators of Pathology.
PHILIP S. STOUT, M. D., .....	
RUFUS B. SCARLETT, M. D., .....	
JOHN M. CAMPBELL, M. D., .....	
CHARLES H. GERHARD, M. D., .....	} Assistant, Demonstrator of Gross Morbid Anatomy.
RALPH S. LAVENSON, M. D., .....	

#### SURGICAL PATHOLOGY.

GEORGE P. MÜLLER, M. D., .....	<i>Associate in Surgery.</i>
JOHN SPEESE, M. D., .....	} Assistant Instructors in Surgery.
BENJAMIN A. THOMAS, M. D., .....	

#### CLINICAL PATHOLOGY.

WILLIAM PEPPER, M. D., .....	<i>Assistant Professor of Clinical Pathology.</i>
THOMAS A. COPE, M. D., .....	<i>Instructor in Medicine.</i>
G. M. PIERSOL, M. D., .....	<i>Assistant Instructor in Medicine.</i>

#### NEURO-PATHOLOGY.

WILLIAM G. SPILLER, M. D., .....	<i>Professor of Neuro-pathology.</i>
ALFRED R. ALLEN, M. D., .....	<i>Instructor in Neuro-pathology.</i>
S. D. LUDLUM, M. D., .....	<i>Instructor in Neuro-pathology.</i>
SAMUEL LEOPOLD, M. D., .....	<i>Assistant in Neuro-pathology.</i>

**GYNECOLOGICAL PATHOLOGY.**

JOHN G. CLARK, M. D., ..... *Professor of Gynecology.*  
CHARLES C. NORRIS, M. D., .... *Assistant in Gynecological Pathology.*

**OPHTHALMIC PATHOLOGY.**

GEORGE E. DE SCHWEINITZ, M. D., ... *Professor of Ophthalmology.*  
CHARLES M. HOSMER, M. D., .... *Assistant in Ophthalmic Pathology.*

**OTOTOLOGICAL PATHOLOGY.**

B. ALEXANDER RANDALL, M. D.,..... *Professor of Otology.*  
RALPH BUTLER, M. D., ..... *Assistant in Otological Pathology.*

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LOUIS SCHMIDT, ..... }  
ERWIN P. FABER, ..... } *Artists.*

Instruction in Pathology extends over the second half of the first year and the full second and third years of the medical curriculum. The plan of instruction embraces a general course in pathology under the direct supervision of the chair of Pathology, and a group of courses of applied special pathology, limited to the third year, in charge of the staff of instructors of the clinical branch concerned. In this latter group, which looks eventually toward the presentation of all special applications advantageously taught by laboratory methods, there have thus far been organized laboratories of Surgical Pathology, Clinical Pathology, Neuro-pathology, Gynecological Pathology, Ophthalmologic Pathology and Otological Pathology. In each division of the subject except the last three named, the plan of teaching includes systematic lectures, demonstrations and practical class exercises.

The general instruction in pathology includes the following courses:

I. ELEMENTARY PATHOLOGY AND ETIOLOGY. *Professor Smith.*—A series of lectures, occupying two hours each week in the second half of the term, is given to the First-year Class upon elementary pathology; including consideration of the types of disease, classification of disease, termination of disease, the signs of death, and upon etiology. In the latter connection, among other subjects, the outlines of animal parasitology and the immediate pathologic relations of the vegetable parasites are taken up. Illustrative demonstrations as required by the subject are employed.

II. GENERAL PATHOLOGY. *Professor Smith and assistants.*—This subject is given to the Second-year Class. Three lectures each week for the first half of the term are devoted to the various retrograde and progressive elementary pathological processes, to regeneration, inflammation, the specific inflammations, tumor formation and to teratology. In the laboratory of pathological histology, each student devotes three periods of two and one-half hours each week to the preparation and study of illustrative tissues by the microscope, the gross features of the processes discussed being correlated by frequent demonstration of material in the laboratory or in lectures.

In addition, where suitable, as in connection with embolism, thrombosis, regeneration and inflammation, work of an experimental type is included to aid in the explanation of such processes.

III. SPECIAL PATHOLOGY. *Professor Smith and assistants.*—Instruction in the special pathology of the various organs, with particular reference to the pathological physiology of each and the development of symptoms of disease, is taken up systematically in lectures in the second half of the second year; and in the laboratory of pathological histology the minute changes of the more important diseases of each organ are studied in as close relation as possible with the lecture instruction. At the same time brief demonstrations of the gross appearances of the diseased organs are made; and when profitable, as in connection with the subject of immunity from infectious diseases, experimental work is introduced for the elucidation of special problems.

In the third year the lectures on special pathology are continued two hours each week—the entire instruction in the branch thus covering one and one-half years.

IV. GROSS MORBID ANATOMY AND AUTOPSY-MAKING. *Professor Smith and assistants.*—For one and one-half hours each week during the third year for each student, demonstrations of general and special gross morbid anatomical specimens are given; and instructions carried out in the performance of autopsies. The class is divided into small sections, and as autopsies are being performed in the University Hospital and Blockley Hospital, the students are required to attend, and participate in the work. In the fourth year the students of the various ward classes in the University Hospital attend the autopsies upon those subjects with whose clinical course each class has been familiar in the wards; special instruction, attempting to correlate the pathological findings with

the known symptoms of the case in life, being given. (Dr. Laven-  
son.)

Opportunity for the completion of such investigations by histo-  
logical and bacteriological methods is afforded the student in the  
laboratories of the department.

V. ADVANCED WORK. *Professor Smith and assistants.*—With  
the increased space and added facilities afforded by the McManes  
Laboratory of Pathology, material development of class instruction  
in the line of special pathology and pathological technology has been  
obtained; and there are offered to advanced students and post-  
graduates, as elective studies, special courses in advanced patho-  
logical histology, museum work and autopsy-making, in experi-  
mental pathology, in pathological bacteriology and animal parasit-  
ology; and opportunity is afforded those suitably trained to under-  
take special investigations in the one or other type of pathological  
problems, such work being open at any period during the term or  
in vacation.

In addition to the above, the following courses are presented by the  
various clinical groups in the special departments of the McManes  
Laboratory of Pathology (the courses IX and X being, however,  
as yet undeveloped and not given the undergraduate classes):

VI. SURGICAL PATHOLOGY. *Dr. Müller.*—(See *Surgery*, page  
427.)

VII. CLINICAL PATHOLOGY. *Drs. Pepper, Cope and Piersol.*—  
(See *Medicine*, page 422.)

VIII. NEURO-PATHOLOGY. *Dr. Spiller.*—(See *Neurology*, page  
435.)

IX. GYNECOLOGICAL PATHOLOGY. *Dr. Chas. C. Norris.*

X. OPHTHALMIC PATHOLOGY. *Dr. Chas. M. Hosmer.*

XI. OTOLOGICAL PATHOLOGY. *Dr. Ralph Butler.*

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#### THERAPEUTICS AND PHARMACOLOGY.

DAVID L. EDSELL, M. D., ..... *Professor of Therapeutics and  
Pharmacology.*

HORATIO C. WOOD, JR., M. D., ..... *Associate Professor of Phar-  
macology.*

WILLIAM SCHLEIF, M. D., ..... *Demonstrator of Materia Med-  
ica and Medical Pharmacy.*

HENRY A. NEWBOLD, M. D.,.....	<i>Assistant Demonstrator of Materia Medica and Medi- cal Pharmacy.</i>
DANIEL M. HOYT, M. D.,.....	<i>Instructor in Therapeutics. Second Assistant Demo- nstrator of Pharmacology.</i>

**FIRST YEAR WORK.**—*Materia Medica and Pharmacy* are taught in this year by Drs. Schleif and Newbold. The general purpose followed is to give the student as graphically as possible the knowledge that he requires regarding the general physical characteristics of drugs, their official preparations, their doses, their important incompatibilities, and the suitable forms of prescribing them. Informal talks are given to the whole class, explaining the principles of the work as different portions are taken up; and the class is then taken into the laboratory of pharmacy in large sections. There, by making preparations themselves or by having them demonstrated, the students become familiar in a practical way with important incompatibilities, and with the important principles governing the prescribing of drugs in accordance with their physical characteristics and the palatability of the preparations. Small sections are, at the same time, taught the simple forms and symbols of prescription-writing, and official preparations and doses, through being required to come prepared with knowledge of the preparations, doses and main action of the important drugs and to write perfectly simple prescriptions containing one of the official preparations in proper dose.

**THIRD YEAR WORK.**—The students are instructed in the important principles of the science of pharmacology by Drs. Wood and Hoyt. A lecture is given by Dr. Wood once a week, for half the year, upon the physiological effects and the toxicology of important drugs; and, at the same time, the students, in sections, have three hours weekly, for two months, performing nerve, heart, and muscle experiments in the pharmacological laboratory. Dr. Wood also gives each section a demonstration of one hour a week for two months, exhibiting the action of important drugs upon the circulation. In the latter half of the year, the class is taken in sections and taught prescription-writing in a more elaborate form, than in the first year; the case-system being used, and the student being required to write prescriptions with a consideration of special conditions to be treated, with a proper choice of drugs for these conditions.

tions, and with a proper consideration of incompatibilities, palatability, etc., in the combinations that he uses.

The students also have, during the third year, two lectures a week from Dr. Edsall, on the principles of the practical management of the sick. In these they first have illustrated in a short series of lectures the guiding principles in treatment that may often be derived from the more scientific side of their general course of medical study. They are then instructed in the principles of practical dietetics; practical case hygiene, in the various groups of diseases; and in the principles determining the clinical choice of drugs, with especial consideration of their main physiological effects, and the good or bad collateral effects. Instruction is also given in the main principles of psychotherapy, electrotherapy, hydrotherapy, exercise, etc.; and the course for the third year finishes with lectures illustrating the application of these general principles in the management of various groups of diseases—as, for instance, in infectious diseases, gastrointestinal diseases, etc.

In the last half of the year recitations are conducted weekly by Dr. Hoyt. The purpose of these is not only to fix facts in the students' minds but to meet as far as possible their individual difficulties in comprehending and making use of what they are taught in the formal courses.

**FOURTH YEAR WORK.**—In the Fourth Year, the students have, each week, a clinical period of an hour and a half with Dr. Edsall, in which the general features, and particularly the details, of the management of individual cases are taken up; and the students are required to give the exact details of the orders and the reasons for the orders that they would give as regards diet, hygiene, drugs, and other measures, in the cases that they see in this course. They are likewise required to state the changes that they would make from time to time in cases that can be shown repeatedly. The remarks of the student and the conditions in the case are made the basis of discussion of the various conditions shown. Demonstrations are also given them of the proper methods of carrying out various therapeutic measures that are used in private practice. They are taught, for instance, the proper methods of bed-making, caring for the patient's person, giving various kinds of baths, making applications of heat and cold, etc.,—all these being demonstrated before them by the nursing staff. They are likewise taught practically the use of medical instruments, such as the hypodermic syringe, the transfusion apparatus, the aspirator, dry and wet cups, and various other matters of this kind.

## MEDICINE.

JAMES TYSON, M. D., .....	<i>Professor of Medicine.</i>
JOHN H. MUSSER, M. D., .....	<i>Professors of Clinical Medi- cine.</i>
ALFRED STENGEL, M. D., .....	
M. HOWARD FUSSELL, M. D., .....	
ALOYSIUS O. J. KELLY, M. D., .....	<i>Assistant Professors of Medi- cine.</i>
DAVID RIESMAN, M. D., .....	
JOSEPH SAILER, M. D., .....	
WARFIELD T. LONGCOPE, M. D., .....	<i>Assistant Professor of Applied Medicine.</i>
WILLIAM PEPPER, M. D., .....	<i>Assistant Professor of Clin- ical Pathology.</i>
J. ALISON SCOTT, M. D., .....	<i>Adjunct Professors of Medi- cine.</i>
THOMAS G. ASHTON, M. D., .....	
ARTHUR A. STEVENS, M. D., .....	<i>Lecturer on Medical Ter- minology, and Physical Diagnosis.</i>
B. FRANKLIN STAHL, M. D., .....	<i>Lecturer on Dietetics of the Sick.</i>
— — — — — .....	<i>Lecturer on the History of Medicine.</i>
HERMAN B. ALLYN, M. D., .....	<i>Associates in Medicine.</i>
GEORGE W. NORRIS, M. D., .....	
HENRY D. JUMP, M. D., .....	
JOHN M. CRUICE, M. D., .....	
ALBERT P. FRANCINE, M. D., .....	<i>Instructors in Medicine.</i>
JOSEPH S. EVANS, M. D., .....	
CLIFFORD B. PARR, M. D., .....	
FRED. H. KLAER, M. D., .....	
THOMAS A. COPE, M. D., .....	
ARTHUR A. STEVENS, M. D., .....	
B. FRANKLIN STAHL, M. D., .....	<i>Instructors in Physical Di- agnosis.</i>
SHERBOURNE W. DOUGHERTY, M. D., .....	
CHARLES H. WEBER, M. D., .....	
WILLIAM F. MOORE, M. D., .....	
RALPH PEMBERTON, M. D., .....	
HOWARD KENNEDY HILL, M. D., .....	<i>Assistant Instructors in Medicine.</i>
GEORGE MORRIS PIERSOL, M. D., .....	
EDWARD HARRIS GOODMAN, M. D., .....	

The instruction in Medicine begins in the first year with lectures in Medical Terminology and extends throughout the course, being

graded in such a way that one year's work leads up by suitable gradation to that of the next.

In the second year the student is taught the principles of physical diagnosis and the methods of applying them.

In the third year, the instruction consists of didactic lectures in medicine, medical clinics, observation classes, ward classes, practical work in the clinical laboratory, history-taking, and practice in the laryngological dispensary.

In the fourth year, didactic lectures, medical clinics, clinical conferences, and ward classes and special work in the dispensaries occupy the student's time.

Much of the instruction of the three years is intramural, but in part the required work is extramural; and in addition abundant opportunity is given at various hospitals for optional extramural work. Two didactic lectures are given each week to students of the third and fourth years, during which the entire subject of medicine is covered in a systematic manner. At the same time the "bedside" method is fully appreciated, and forms an essential part of the teaching. This form of teaching has been greatly enlarged as compared with former years, and the hours devoted to ward visits especially have been increased.

#### FIRST YEAR

I. MEDICAL TERMINOLOGY. *Dr. Stevens.*—One lecture a week during the first half of the year to the members of the First-year Class. The object of this course is to familiarize the student with the more common terms in Medical Nomenclature. The terms are defined, their derivation if not apparent is pointed out and conditions are briefly described illustrating their practical application.

#### SECOND YEAR.

II. PHYSICAL DIAGNOSIS. *Dr. Stevens.*—The lectures in Physical Diagnosis (one hour a week during one-half of the year) are devoted to an exposition of the general principles of the subject, rather than to the study of physical signs in special diseases. At this period the student is as yet unfamiliar with the pathology and symptoms of disease, and is not therefore prepared to study special physical diagnosis. The main purpose of the lectures and practical work is to teach the student the physical signs in health, and the fundamental conditions involved in the development of such signs in the normal and diseased subject.

In addition to the lectures, practical work is conducted by Drs. Stevens, Stahl, Dougherty, Weber and Moore. The class is divided into small sections of from six to ten students, and each section has one hour and a half a week during one-half of the year, with a demonstration given to a larger group one hour a week during one-half of the year. As in the lectures which these practical exercises are intended to illustrate, attention is directed mainly to normal conditions, so that the student may become thoroughly familiar with physical signs in health.

#### THIRD YEAR.

**III. DIDACTIC LECTURES.** *Professor Tyson.*—Two didactic lectures a week on the Theory and Practice of Medicine are given in the New Medical Laboratories. These lectures cover the subject of medicine systematically and are illustrated by numerous drawings, casts, etc., from the George B. Wood, Stillé, and Pepper collections.

**IV. MEDICAL CLINICS.** *Professor Tyson.*—The whole class attends one general medical clinic a week, given at the University Hospital.

**V. OBSERVATION CLASSES.** *Dr. Fussell.*—These classes are intended to continue the study of Physical Diagnosis onward from the point to which it was carried in the second year. Cases illustrating objective symptoms and visible clinical signs are presented in such a way as to train the student's powers of observation, and to familiarize him with the external signs of disease. The class is divided into sections of twenty to thirty students, and each section receives one hour of instruction a week during twelve weeks.

**VI. WARD CLASSES.** *Drs. Jump, Francine, Farr and Klaer.*—The ward classes in medicine are conducted in the dispensary of the University Hospital. The class is divided into sections of from six to eight students, and each section receives one hour of instruction a week during the entire year. The ward classes of the third year are devoted especially to Special Physical Diagnosis, thus continuing the work of the second year, and illustrating in the diseased the general principles learned in the normal person.

**VII. CLINICAL LABORATORY.** *Drs. Pepper, Cope and Piersol.*—The clinical laboratory course is conducted in the New Medical Laboratories. The class is divided into three sections, each attending two hours a week during the entire year. The course consists of instruction in the chemical and microscopic examination of urine,

blood, sputum, stomach contents, feces, etc., with the aid of various instruments of precision. To a certain extent, especially in the examinations of the urine and blood, the laboratory course is a review of the work done in the first and second years in the courses in histology, pathology and chemistry.

#### FOURTH YEAR.

VIII. DIDACTIC LECTURES. *Professor Tyson.*—The members of the Fourth-year Class attend, together with the Third-year Class. The lectures are not repeated in both years, excepting those pertaining to certain important chapters of medicine, but the two years are required to cover the entire ground.

IX. MEDICAL CLINICS. *Professor Tyson.*—One clinical lecture a week is conducted at the University Hospital.

X. CLINICAL CONFERENCES. *Drs. Musser and Stengel* each meet the entire Fourth-year Class one hour weekly in the medical amphitheatre of the University Hospital (or occasionally in the amphitheatre of the Philadelphia Hospital). This hour is devoted to a modified medical clinic, in which a limited number of the students are called to the bedside to assist in the examination of the patient, and to confirm the conditions observed by the lecturer. The students are called to this work in rotation, so that as far as possible the hour may be a clinical conference rather than a general clinic.

*Drs. Musser and Stengel* each conduct two additional clinical conferences weekly, each conference being an hour and a half in duration. These conferences are held in rooms so arranged that students are closely grouped about the patient and instructor, and at the same time in full view of the blackboard and screen, where charts and lantern demonstrations can be used to illustrate the case under discussion. Two students are assigned to each case that is presented before the class, and are required to examine their patient during the week preceding his presentation at the conference. The report of the students on the history, physical examination, and diagnosis of the case is read, and the case is then fully discussed. In every case the blood and urine examinations must be reported, and when of interest in connection with the patient, examinations of the stomach contents, sputum, etc. Particular attention is paid in the conference to questions in diagnosis, the larger clinical conferences being reserved for more general discussions of symptomatology, diagnosis, and treatment.

XI. WARD CLASSES. *Professor Tyson, Drs. Fussell, Riesman, Kelly, Sailer, Allyn and Norris.*—The medical ward classes of the fourth year are devoted especially to differential diagnosis and treatment, thus advancing somewhat beyond the point to which the ward classes of the third year had carried the students. The class is divided into small sections of from six to ten students, and each section attends one ward class a week throughout the year in the University Hospital or in the Philadelphia Hospital; and an additional hour weekly during one-half of the year. Professor Tyson conducts one of the ward classes each week.

*Dr. J. Alison Scott* meets one-third of the class one hour weekly for a special ward class at the Pennsylvania Hospital. The abundance of acute cases in this hospital makes it possible to bring the students in contact with a large number of cases of a type not readily presented in clinics.

XII. WARD WORK. One-third of the class is assigned to duty in the University Hospital, another third in the Philadelphia Hospital, for a third of the year. This gives to each student ward work during two-thirds of the year. The work is arranged as follows. The student reports at the ward daily, excepting Saturday and Sunday, at 10 A. M., and is occupied for two hours. From 10 to 11 A. M. he examines the cases assigned to him, each member of the group having a certain number of cases under his sole care. All physical and clinical examinations are made under the guidance of the Resident Physicians. At 11 A. M. one of the Physicians or Assistant Physicians of the Hospital makes the rounds accompanied by the students on duty in the ward. The student in charge of each case reports on the progress of the case and on his examinations, and criticisms and explanations are made by the instructor. In this way the student is taught the methods of clinical work and is trained to observe his cases carefully. It is not intended that the ward visits should supplant ward classes, in which detailed demonstration of cases familiarizes the student with thoroughness and system in his examinations.

XIII. OTHER EXTRAMURAL TEACHING. The roster is so arranged that the students of the Third and Fourth-year Classes are able to attend the medical clinics at the Pennsylvania and the Philadelphia Hospitals on Wednesdays and Saturdays. Other medical clinics may also be attended by the members of the Third and Fourth-year Classes.

**XIV. HISTORY OF MEDICINE.** One lecture weekly during one-half of the year is devoted to this subject.

**XV. CLINICO-PATHOLOGICAL DEMONSTRATIONS.** All autopsies held at the University Hospital will be attended by the students on duty in the ward in which the case under examination occurred. The Assistant Pathologist of the Hospital will conduct the autopsy and the clinician in charge of the case will first explain the clinical aspects of the case.

**NUMBER OF HOURS DEVOTED BY EACH STUDENT TO MEDICINE.\***

	<i>First Year.</i>	Hours.
Lectures on Terminology .....	16	
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	<i>Second Year.</i>	
Lectures on Physical Diagnosis .....	16	
Demonstrations on Physical Diagnosis .....	40	
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	<i>Third Year.</i>	
Didactic Lectures in Medicine .....	64	
Medical Clinics .....	32	
Observation Classes .....	12	
Ward Classes .....	32	
Clinical Laboratory .....	64	
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	<i>Fourth Year.</i>	
Didactic Lectures .....	64	
Medical Clinics .....	32	
Clinical Conferences .....	160	
Ward Classes .....	59	
Ward Work .....	90	
<hr/>		
Total .....	681	

**SURGERY.**

J. WILLIAM WHITE, M. D., .....	<i>John Rhea Barton Professor of Surgery.</i>
EDWARD MARTIN, M. D., .....	<i>Professors of Clinical Sur-</i>
CHARLES H. FRAZIER, M. D., .....	<i>gery.</i>

\* The hours given to lectures on the History of Medicine are excluded.

<b>ALFRED C. WOOD, M. D., .....</b>	<i>Assistant Professor of Surgery.</i>
<b>J. EDWIN SWEET, M. D., .....</b>	<i>Assistant Professor of Experimental Surgery.</i>
<b>RICHARD H. HARTE, M. D., .....</b>	<i>Adjunct Professors of Surgery.</i>
<b>JAMES P. HUTCHINSON, M. D., .....</b>	
<b>JOHN B. CARNETT, M. D., .....</b>	
<b>JOHN H. JOPSON, M. D., .....</b>	
<b>GEORGE P. MÜLLER, M. D., .....</b>	<i>Associates in Surgery.</i>
<b>T. TURNER THOMAS, M. D., .....</b>	
<b>HENRY K. PANCOAST, M. D., .....</b>	<i>Lecturer on Skiagraphy.</i>
<b>GEORGE D. MORTON, M. D., .....</b>	
<b>JEAN J. A. VAN KAATHOVEN, M. D., .....</b>	
<b>JOHN BUSCH, M. D., .....</b>	
<b>JOHN SPERSE, M. D., .....</b>	<i>Assistant Instructors in Surgery.</i>
<b>BENJAMIN A. THOMAS, M. D., .....</b>	
<b>FREDERICK PRIME, JR., M. D., .....</b>	
<b>CHARLES F. MITCHELL, M. D., .....</b>	
<b>ELDRIDGE S. ELIASON, M. D., .....</b>	

The course in Surgery extends over a period of two years (the third and fourth years), and is conducted by the Professor of Surgery, two Professors of Clinical Surgery, an Assistant Professor, two Adjunct Professors, and a corps of clinical instructors. The course, which includes instruction in surgical pathology, in the principles and practice of surgery, in practical minor surgery and in operative surgery, is so arranged that every student shall have received at its termination systematic instruction in every subject.

The methods are varied, and are designed to give the student thorough training in the fundamental principles concerning the pathogenesis of all surgical affections; to develop his powers of observation; to make him thoroughly conversant with the principles underlying every plan of treatment; and, as far as possible, to give him opportunity under the direction of instructors to put in practice certain minor and major operative procedures. They include: (1) Demonstrations in Surgical Pathology; (2) Didactic Lectures; (3) Surgical Clinics; (4) Surgical Ward Classes; (5) Clinical Conferences in Surgery; (6) Courses in Practical Minor Surgery, including Bandaging, Fracture Dressing, and Dispensary Work; (7) Operative Surgery; (8) General Reviews; (9) Ward Work and Visits; and (10) Experimental Surgery.

I. SURGICAL PATHOLOGY. *Dr. Frazier*.—Once a week throughout the year, a lecture and demonstration to the Third-year Class. The projection of lantern slides and microscopic sections upon the screen, and demonstrations of fresh specimens from the surgical clinic and from the museum, serve to illustrate the lectures.

*Dr. Müller*.—Demonstrations of charts, gross specimens and microscopic specimens, to each member of the class, one and one-half hours a week. This course is supplemental to Dr. Frazier's lectures, and aims to present specimens illustrative of the principal surgical diseases. The following subjects are among those demonstrated: repair of wounds, suppuration, abscess, gangrene ulcer, fistula, sinus; diseases of the thyroid, salivary and mammary glands; repair after fracture, diseases of bones, joints, ligaments, bursæ; diseases of the digestive tract, including the lip, tongue, stomach, gall bladder, liver, pancreas, intestine, appendix and rectum; diseases of the kidney, ureter, bladder, prostate, penis, scrotum and testicle; tumors about the jaw, connective tissue tumors, epithelial skin tumors; diseases of the lymphatic system.

II. DIDACTIC LECTURES. *Professor White*.—Two didactic lectures a week to the Third and Fourth-year Classes, outlining the etiology, symptomatology, diagnosis and treatment of the more important surgical conditions.

III. SURGICAL CLINICS. *Professor White*.—One surgical clinic a week is given to the Third and Fourth-year Classes.

*Professor Martin*: One surgical clinic a week to the Fourth-year Class.

*Dr. Frazier*: One surgical clinic a week to the Fourth-year Class.

*Dr. Müller*: One surgical clinic a week to the Third-year Class.

IV. SURGICAL WARD CLASSES.—Each student attends three ward classes a week throughout the session. The student personally examines cases, expresses his views as to the diagnosis and treatment, performs certain minor operations, assists in operations, and is given opportunity to administer anesthetics, with the assistance of an instructor.

*Professor White*: One hour a week at the University Hospital.

*Dr. Wood*: One hour a week at the University or Philadelphia Hospital.

*Dr. Harte or Dr. Hutchinson:* One hour a week at the Pennsylvania Hospital.

*Drs. Carnett and Thomas.*—Alternately, one hour a week at the Philadelphia Hospital.

V. SURGICAL DIAGNOSIS. *Professor Martin.*—One hour a week to the Third-year Class.

VI. PRACTICAL MINOR SURGERY. *Dr. Wood and assistants.*—One hour a week throughout the year. This course, for which the class is divided into sections, is given in the Hospital and the Surgical Out-Patient Department. The course is chiefly practical, and includes the following exercises: application of dressings to minor surgical cases, cerebral localization, application of heat and cold, hemostasis, application of plaster-of-Paris and adhesive dressings, catheterization, irrigation, intravenous injection, hypodermoclysis, local anesthesia, the preparation and care of patients, and the after-treatment. In addition to the course in the Out-Patient Department, a systematic course is given in bandaging to the Second-year Class (four and one-half hours a week for a period of seven weeks) and to the Third-year Class in fracture dressings (one hour a week for a period of ten weeks).

VII. OPERATIVE SURGERY. *Dr. Jopson and assistants.*—In this course each student performs, or assists in the performance, of the major operations upon the cadaver (*a*) upon the extremities (ligations, amputations, disarticulations and excisions); (*b*) upon the abdominal cavity (appendectomy, intestinal anastomosis, herniotomy); operations upon the gall bladder; (*c*) upon the head (trephining); (*d*) and upon the neck (tracheotomy and intubation).

VIII. SURGICAL REVIEW. Periodically throughout the year both the Third and Fourth-year Classes are examined upon the subjects in which they have received instruction.

IX. WARD WORK. One-third of the class is assigned to duty in the University Hospital, another third in the Philadelphia Hospital, for a third of the year. This gives to each student ward work during two-thirds of the year. The work is arranged as follows: The student reports at the ward at 10 A. M., and is occupied for two hours, daily, excepting Saturday and Sunday. From 10 to 11 A. M., he examines the cases assigned to him, each member of the group having a certain number of cases under his sole care. All physical and clinical examinations are made under the guidance of a resident physician.

At 11 A. M., one of the two sections in the surgical wards goes to

the operating room where *the Students* participate in the operations of the day, serving as assistant, etherizer, recorder or critic. The student is thus brought in close contact with the operation upon the case which he has had an opportunity to examine before. He will also have an opportunity to follow it up in his ward work. The other section remains in the surgical wards and makes rounds accompanied by one of the surgeons or assistants surgeons. The student in charge of each case reports on the progress of each case and upon his examinations, and criticisms and explanations are made by the instructor. In some instances the students are taken to the dressing room and instructed in the methods and technique of surgical dressings.

**X. EXPERIMENTAL SURGERY.** *Dr. Sweet.*—The elective course in experimental surgery is open to a limited number of those men of the third year class, who by inclination and personal qualities demonstrate an especial fitness for the practice of surgery. The object of the course is to give these qualified men opportunity to practice the fundamental principles of Surgery in work upon definite surgical problems.

#### NUMBER OF HOURS DEVOTED BY EACH STUDENT TO SURGERY.

	Hours.
Surgical Pathology.....	80
Didactic Lectures .....	128
Surgical Clinics .....	160
Surgical Ward Classes .....	82
Minor Surgery .....	32
Operative Surgery .....	14
Practical Surgery and Surgical Diagnosis .....	42
Ward Work .....	52
Total.....	<u>590</u>

#### ORTHOPEDIC SURGERY.

DE FOREST WILLARD, M. D.,..... *Professor of Orthopedic Surgery.*

JAMES K. YOUNG, M. D.,..... *Associate in Orthopedic Surgery.*

JOSEPH M. SPELLISSY, M. D.,.....  
WALTER G. ELMER, M. D.,.....  
THOS. A. O'HARA, M. D.,..... } *Instructors in Orthopedic Surgery.*

The instruction in Orthopedic Surgery is confined to the fourth year.

I. CLINICAL INSTRUCTION. *Professor Willard*.—Clinical instruction is given one hour a week from October 1 to February 1. This course includes the surgical and mechanical treatment of congenital malformations, deficiencies and deformities; also of acquired distortions and deformities the result of disease or injury, joint diseases, rickets, infantile spinal and cerebral paralyses, etc., etc.

II. WARD CLASS WORK. *Drs. Young, Spellissy, Elmer and O'Hara*.—For ward teaching, the Fourth-year Class is divided into small sections, which meet once a week. Cases in the wards and dispensary are employed to perfect each student in personal diagnosis and treatment. Instruction is also given in the application of apparatus, plaster-of-Paris and corrective dressings; the construction of braces; the treatment of lateral curvature, paralysis, etc. Each student is expected personally to perform all the necessary manipulations.

A specially equipped orthopedic gymnasium connected with this department is in daily use for demonstrating methods for the correction of deformities and the development of muscular power.

III. WORK IN OUT-PATIENT DEPARTMENT. Dispensary work is continued daily throughout the year. Students desiring special practical work can arrange for certain periods in the Dispensary.

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### GYNECOLOGY.

JOHN G. CLARK, M. D., .....	<i>Professor of Gynecology.</i>
HENRY D. BEYEA, M. D., .....	<i>Associates in Gynecology.</i>
BROOKE M. ANSPACH, M. D., .....	
CHARLES C. NORRIS, M. D., .....	<i>Instructors in Gynecology.</i>
WILLIAM B. SMALL, M. D., .....	
FLOYD E. KEEBE, M. D., .....	

The instruction in Gynecology extends throughout the third and fourth years and comprehends:

### THIRD YEAR.

I. RECITATIONS AND LANTERN DEMONSTRATIONS. One hour a week devoted either to recitations conducted by Drs. Anspach, Norris and Luther, or to lantern demonstrations by Professor Clark.

During this year recitations are conducted by the instructors, preceding the lantern demonstrations by the Professor of Gynecol-

ogy. It is intended that the demonstrations shall fully supplement the recitations, thus rendering as clear as possible the histologic, anatomic, and pathologic, as well as the operative side of Gynecology. The third year instruction is entirely theoretic, and is intended to prepare the student for his practical work of the fourth year.

#### FOURTH YEAR.

**II. CLINICAL WARD CLASSES.** *Professor Clark or Dr. Anspach.*—Three times a week. The class is divided into sections, which attend the clinical ward classes. These sections are further subdivided into small groups of students who see all cases with the professor or instructors before any plan of treatment is instituted. The history of the case is carefully reviewed; and, instead of the usual clinical lecture preceding an operation, the special group of students for the day are closely quizzed on all points relative to diagnosis, treatment, and prognosis. Immediately after the operation, all points on the technique of the operation, the post-operative care of the patient, the possible complications, and the ultimate prognosis are fully considered.

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#### DERMATOLOGY.

LOUIS A. DUHRING, M. D., ..... *Professor of Dermatology.*  
MILTON B. HARTZELL, M. D., ..... *Associate in Dermatology.*

**I. LECTURES.** *Professor Duhring.*—Two lectures weekly are given to the members of the entire Fourth-year Class, the subject-matter being descriptive of the commoner diseases of the skin as met with in this country. The lectures are abundantly illustrated by charts, paintings, photographs, wax and papier-mache models. The course begins October 1 and terminates December 22.

**II. CLINICS.** *Professor Duhring.*—Once weekly Fourth-year Class October 1 to December 22, and Third-year Class January 1 to May 1, in the amphitheatre of the Hospital. A number of cases are exhibited and commented on in such a manner as to render the clinical features of the disease plain.

**III. WARD INSTRUCTION.** *Dr. Hartzell.*—Three times weekly to sections of Fourth-year Class, the students thus coming in contact with cases.

## **OPHTHALMOLOGY.**

GEORGE E. DE SCHWEINITZ, M. D., . . . .	<i>Professor of Ophthalmology.</i>
JOHN T. CARPENTER, M. D., . . . .	<i>Lecturer on Ophthalmology.</i>
EDWARD A. SHUMWAY, M. D., . . . .	
H. MAXWELL LANGDON, M. D., . . . .	
THOMAS B. HOLLOWAY, M. D., . . . .	
CARL WILLIAMS, M. D., . . . .	<i>Instructors in Ophthalmology.</i>

**I. PRACTICAL WORK IN THE PHYSIOLOGICAL LABORATORY.** The second-year men are each provided with suitable appliances, an optical box, an ophthalmoscope, an artificial eye, color tests, etc., and are instructed in the rudiments of physiological optics and in the physiology of the eye. This course, which consists of a series of laboratory hours, is conducted by the Professor of Physiology and his assistants.

**II. LECTURE DEMONSTRATIONS AND CLINICAL LECTURES.** *Professor de Schweinitz.*—These are given twice a week, from the first of October until the first of February, to members of the Third-year Class. The subjects covered in this course comprise the methods of examining the patient and the external examination of the eye; functional testing; diseases and injuries of the eye; the eye in its relation to general diseases; medical ophthalmoscopy and medical ophthalmology; and operative ophthalmology. The clinical lectures in this course continue throughout the academic year. Forty-seven hours are devoted to the entire course.

**III. PRACTICAL WORK.** *Drs. Carpenter, Shumway, Holloway, Williams and Langdon.*—Daily clinics are given in the Dispensary and in the wards of the Philadelphia Hospital. The students of the Third-year Class are divided into sections of about thirty men, and each of these sections subdivided into smaller sections of ten. Each subsection has the opportunity in turn of closely inspecting the patients with external inflammatory diseases of the eye, of seeing the method of applying the remedies, of making the commoner applications utilized in the treatment, of learning the use of the ophthalmoscope so that each student may recognize the healthy fundus and its important diseased conditions; and of ascertaining the results secured by functional testing, such as the pupillary reflexes, the visual acuity, the field of vision, the balance of the external ocular muscles, and the refractive errors. The number of hours devoted to this course is forty-eight.

IV. The students of the fourth year have the opportunity of continuing the instruction in Ophthalmology by attendance on the clinical lecture, which continues throughout the academic year, and by work in the Eye Dispensary one hour weekly.

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### OBSTETRICS.

BARTON COOKE HIRST, M. D., .....	<i>Professor of Obstetrics.</i>
RICHARD C. NORRIS, M. D., .....	<i>Assistant Professor of Obstetrics.</i>
JOHN H. GIRVIN, M. D., .....	<i>Associates in Obstetrics.</i>
WILLIAM R. NICHOLSON, M. D., .....	
WILLIAM A. N. DORLAND, M. D., .....	
JOHN C. HIRST, M. D., .....	<i>Assistant Instructors in Ob-</i>
J. H. ALLEN, M. D., .....	<i>stetrics.</i>
L. F. LUBURG, M. D., .....	

A graduated course of instruction in Obstetrics is given to the members of the Third and Fourth-year Classes in the Maternity Pavilion of the University Hospital, in the New Medical Laboratories and in the Out-Patient Department of the Hospital, conducted under the direct control of the Professor of Obstetrics.

I. CLINICS. *Professor Hirst.*—Two clinical lectures a week are given to the Third-year Class, the large clinical material of the Maternity Department being used to illustrate a systematic course of lectures on the complications of gestation, labor and the puerperium.

II. DEMONSTRATIONS. Demonstrations of palpation, pelvimetry and the signs of pregnancy are given to sections of four students; routine examinations of urine; attendance on labor cases; demonstrations of the injuries of parturition and their repair.

III. CLINICAL AND OPERATIVE OBSTETRICS. *Professor Hirst.*—One clinic a week to the Fourth-year Class, devoted to the surgical treatment of all the complications of the childbearing act, is given in the maternity amphitheatre.

IV. WARD WORK. Every morning from 10 to 12 a small section of the class, under the supervision of the interne, study the cases in the wards, and under the direction of an instructor, assist in the repair of injuries of the genital canal, in the local treatment of genital infections, the final examination of the puerpera, etc.

V. OBSTETRICAL OPERATIONS. *Professor Hirst.*—In the Anna

Dike Scott Memorial Amphitheatre an exhibition of all the obstetrical operations is given to the members of both the Third and Fourth-year Classes.

**VI. PRACTICAL EXERCISES WITH MANIKINS AND FETAL BODIES.** Each student devotes eight hours to the practice upon the manikin of the obstetrical operations.

**VII. PRACTICAL EXERCISES IN THE OUT-PATIENT DEPARTMENT.** This department is under the direct control of the Professor of Obstetrics. The total indoor and outdoor service amounts to 1500 cases a year. The complicated cases in this service demanding operative treatment are transported to the University Hospital, and the operations are exhibited to the combined Third and Fourth-year Classes. Each student attends in confinement from two to five labor cases.

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#### NEUROLOGY.

CHARLES K. MILLS, M. D., ..... *Professor of Neurology.*

WILLIAM G. SPILLER, M. D., ..... *Professor of Neuro-pathology and Associate Professor of Neurology.*

JAMES W. McCONNELL, M. D., ..... *Associate in Neurology.*

ALFRED R. ALLEN, M. D., ..... *Lecturer on Neurological Electrotherapeutics and Instructor in Neurology and in Neuro-pathology.*

S. D. LUDLUM, M. D., ..... *Instructor in Neurology and in Neuro-pathology.*

SAMUEL LEOPOLD, M. D., ..... *Assistant in Neuro-pathology.*

**I. CLINICAL LECTURES.** *Professors Mills and Spiller.*—One clinical lecture a week is given to the Fourth-year students at the University Hospital throughout the entire year, during the first half of the session by Professor Mills, and during the second half by Professor Spiller.

**II. CLINICAL LECTURES (Continued).** One lecture a week is also given to the Fourth-year Class during the first half of the session at the Philadelphia General Hospital. An effort is made to systematize the teaching, especially at the Philadelphia General Hospital, where the large amount of material always at command enables the teacher to select and arrange beforehand the subjects to be discussed.

**III. WARD CLASS INSTRUCTION.** *Dr. McConnell and Instructors.*—This instruction is given during one-half of the year, both in the University and in the Philadelphia General Hospital. The class is divided into small sections, so as to give each student the opportunity of personally investigating the cases under the supervision of the instructors.

**IV. WARD WORK.** Ward work in neurology, similar to that described under instruction in medicine for the fourth year, is given in the University Hospital under the supervision of the professors and instructors in neurology. This ward work is in addition to the ward classes above described.

**V. INSTRUCTION IN OUT-PATIENT DEPARTMENT.** *Dr. McConnell and Other Instructors.*—In connection with the teaching given in the wards of the University and Philadelphia General Hospitals, advantage is taken of the large outdoor neurological service, sections being instructed in the dispensary at times previously arranged. In this way the students are brought in contact with nervous diseases in their earlier as well as in their later manifestations. The methods of studying, recording and treating cases are taught. Lectures and demonstrations in electrotherapeutics are given by Dr. A. R. Allen, lecturer on neurological electrotherapeutics. The electro-medical apparatus used in the outdoor service is of the most modern type, including static, galvanic and faradic instruments. Instruction is given in the use of all the methods now employed in the treatment of diseases of the nervous system.

**VI. NEURO-PATHOLOGY.** *Professor Spiller, assisted by Drs. Allen, Ludlum, and Leopold.*—One hour and a half a week to each member of the Third-year Class, before February 1. The course is open also to post-graduate students. The work is in part clinical. The students are shown various gross pathological specimens, and are taught the signs and symptoms caused by the lesions represented by these specimens. Where considered desirable, the clinical history of the case illustrated is given. The students are by this instruction much better prepared for their fourth-year clinical work in neurology. Microscopical sections illustrating many pathological conditions are demonstrated by the lantern, so that the students are enabled to study the more minute morbid changes occurring in diseases of the nervous system. The technique employed in investigation is also taught so far as possible, so as to include the methods of embedding, cutting, staining, etc., employed in this

branch of medicine. The students are in this way prepared to conduct original investigations in the pathology of the nervous system after their graduation, if they so desire. Instruction is also given in the methods of preparation of the brain and cord for gross examination, so that the nervous tissues may not be injured for microscopical study.

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### PEDIATRICS.

J. P. CROZER GRIFFITH, M. D., . . . . . *Clinical Professor of Pediatrics.*  
THOMPSON S. WESTCOTT, M. D., . . . . . *Associate in Pediatrics.*  
MAURICE OSTHEIMER, M. D., . . . . .  
CHARLES A. FIFE, M. D., . . . . . }  
HOWARD C. CARPENTER, M. D., . . . . . }  
J. CLAXTON GITTINGS, M. D., . . . . . } *Instructors in Pediatrics.*

The course in Pediatrics consists of lectures, ward classes and ward work at the University Hospital and at the Children's Hospital.

The lectures are conducted by the Clinical Professor of Pediatrics in the medical amphitheatre of the University Hospital once a week. Special lectures are given upon the general diagnosis, symptomatology and treatment of disease in children. The more important subjects receive systematic and full discussion, among these being such topics as pneumonia of childhood, gastrointestinal diseases, typhoid fever in infancy and childhood, forms of paralysis, the feeding of infants, etc., etc. In addition to these, the Children's Ward and Dispensary are drawn upon for clinical lectures on the various diseases presenting themselves.

The ward classes are conducted at the University Hospital by Dr. Ostheimer, at the Children's Hospital by Dr. Westcott, and at the Philadelphia Hospital by Drs. Carpenter and Fife. Subsections of the class, consisting of from eight to fifteen students, attend these ward classes three times a week and have the opportunity of examining the patients under the direction of the instructor, and in addition learn the practical management of the diseases of children as conducted in the Hospital wards. The exceptional richness and variety of material afforded by the Children's Hospital make this part of the course a valuable feature.

**LARYNGOLOGY AND RHINOLOGY.**

CHARLES P. GRAYSON, M. D.,..... *Clinical Professor of Laryngology and Rhinology.*

BENJAMIN L. SINGER, M. D., ..... }  
WALTER S. HARGETT, M. D., ..... } *Instructors in Laryngology.*

**I. LECTURES AND CLINICS.** *Professor Grayson.*—From January to May there is a course of weekly lectures given to the Third-year Class, covering the anatomy and physiology of the upper air and digestive tracts, these being illustrated by drawings and by dry and wet preparations. The diseases of the nose and its accessory cavities, of the pharynx, the fauces and the larynx, are systematically studied; and in connection with their causation and treatment, emphasis is laid upon the pathologic and therapeutic importance of the systemic conditions with which they are often associated. The surgery of these special regions is also thoroughly demonstrated during the course by a series of clinics.

**II. PRACTICAL WORK IN OUT-PATIENT DEPARTMENT.** *Professor Grayson and assistants.*—Throughout equal periods of the session the Fourth-year Class attends this course, divided into sections of such size that each student receives an abundance of practical work under the personal supervision of Dr. Grayson and his assistants. The very large service of this dispensary provides ample material for the members of the class to acquire proficiency in the use of the various instruments of examination and treatment, and to become expert in the diagnosis and treatment of the diseases that are more often encountered in general practice.

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**OTOTOLOGY.**

**B. ALEXANDER RANDALL,** M. D., *Clinical Professor of Diseases of the Ear.*

RALPH BUTLER, M. D.,..... *Instructor in Otology.*  
BENJAMIN D. PARISH, M. D.,..... *Assistant Instructor in Otology.*

**I. LECTURES.** *Professor Randall.*—The instruction in the second half of the third year consists of a course of lectures, largely clinical, but with abundant illustrations by anatomical and pathological preparations, models, charts and the stereopticon. Operations for diseases of the mastoid and lateral sinus and abscess of the brain are demonstrated on the cadaver, if not upon patients.

II. PRACTICAL WORK. *Professor Randall and Dr. Butler.*—Practical work is given to the Fourth-year Class in subsections of ten or less, in the Out-Patient Department or wards of the University Hospital. Individual instruction is given by the dispensary staff in the examination, recording and treatment of patients, the work being delegated to the students so far as they may show themselves competent. All are thus drilled in the use of the head-mirror, in rhinoscopy and Eustachian catheterization, as well as in simpler measures. In mastoid and other operations, selected students assist or operate under strict supervision, and follow the cases in the later dressings. Stress is laid throughout upon simplicity in the essential methods of diagnosis and treatment, with minute and conscientious care in application.

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#### GENITO-URINARY DISEASES.

THOMAS R. NEILSON, M. D., ..... *Clinical Professor of Genito-Urinary Diseases.*  
E. HOLLINGSWORTH SITER, M. D., ... *Instructor in Genito-Urinary Diseases.*  
ALEXANDER A. UHLE, M. D., ..... *Assistant Instructor in Genito-Urinary Diseases.*

Instruction in Genito-Urinary Diseases is given in the fourth year.

WARD CLASSES. *Professor Neilson and Drs. Siter and Uhle.*—Ward classes, for which the class is divided into sections, are held three times a week throughout the year in the Out-Patient Department. The students are afforded excellent opportunity to become familiar with the methods of diagnosis and treatment of diseases of the genito-urinary apparatus by personal observation, and by practical work under the guidance of the teachers. House cases requiring operation are operated on by the professor before the class.

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#### ELECTIVES.

FOURTH-YEAR CLASS.—A member of the Fourth-year Class may, with the approval of the professor in charge, inscribe his name for special instruction in any of the clinical branches taught in the school, provided he gives at least one hour a week, for a period of not more than one-half of the academic year, to the work. He may

inscribe his name likewise for special work in the fundamental branches, provided, in the opinion of the professor in charge of the department, he be qualified to undertake it, and has at his disposal the time necessary to its successful performance.

**THIRD-YEAR CLASS.**—A member of the Third-year Class will be privileged to take special work in the fundamental branches on the same conditions as offered to the members of the Fourth-year Class in these branches.

Students contemplating the election of special work in addition to the regular scheduled work of the fourth and third years are expected to observe the following regulations:

(a) The number of electives selected may depend upon the number of hours at the disposal of the student, and the absence of all conflict with the work scheduled on the general roster.

(b) The qualifications on the part of the student for the pursuit of any given subject shall be decided by the professor in charge of the department.

(c) The decision as to the time necessary or desirable to give to the special subject shall rest with the professor in charge.

(d) The practicability of affording special opportunities in any subject or subjects to any or all students electing them will be decided by the professors in charge of the departments.

(e) Consent to enter upon special work must be obtained from the professor in charge in the form of a permit on special blanks prepared for the purpose, to be presented at the office of the Dean before entering upon the work specified.

(f) The right is reserved to the professor of the department to terminate at any time the special privileges of a student for lack of qualifications to pursue profitably the work undertaken, or for irregularity in attendance.

(g) No examination will be held or mark given, for elective work done under these conditions.

**ORDER OF INSTRUCTION, DAILY, BEFORE FEB. 1.—FIRST YEAR.—1908-1909.**

<i>Hour.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
9 A. M.	Cornell. Osteology and Syndesmology.	Cornell. Osteology and Syndesmology.	Special Work.	Special Work.	Special Work.	Special Work.
10 A. M.	Special Work.	Special Work.	Class divided into sections for Pract. Work in Histology and Embryology and in Special Subjects.	Class divided into sections for Pract. Work in Histology and Embryology and in Special Subjects.	Class divided into sections for Pract. Work in Histology and Embryology and in Special Subjects.	Class divided into sections for Pract. Work in Histology and Embryology and in Special Subjects.
11 A. M.	—	—	—	—	—	—
12 M.	Special Work.	Special Work.	—	—	—	—
1 P. M.	—	—	—	—	—	Class divided into sections for Pract. Work in Dissection and in Materia Medica and Pharmacy.
2 P. M.	Class divided into sections for Pract. Work in Dissection and Osteology.	Class divided into sections for Pract. Work in Dissection and Osteology.	Class divided into sections for Pract. Work in Dissection and Osteology.	Class divided into sections for Pract. Work in Dissection and Osteology.	Class divided into sections for Pract. Work in Dissection and Osteology.	—
3 P. M.	—	—	—	—	—	—
4 P. M.	Piersol. Anatomy.	Piersol. Anatomy.	Special Work.	Piersol. Anatomy.	Piersol. Anatomy.	—
5 P. M.	Gymnasium.	—	Gymnasium.	—	Recitation in Materia Medica.	—

See SPECIAL ROSTER for Sections in Practical Work.

**FIRST-YEAR CLASS.****SPECIAL ROSTER OF PRACTICAL WORK.****BEFORE FEBRUARY 1ST.**

THE CLASS IS DIVIDED INTO TWO SECTIONS, DESIGNATED  
RESPECTIVELY A AND B.

Histology and Embryology 10 to 1; Dissection 2 to 4, Saturday 1 to 3; Osteology 2 to 4; Pharmacy 1 to 3.

	<i>Mon.</i>	<i>Tue.</i>	<i>Wed.</i>	<i>Thur.</i>	<i>Fri.</i>	<i>Sat.</i>	
Histology and Embryology...	—	—	A	B	A	B	First period of 42 working days, from Oct. 5 to Nov. 21 inclusive.
Dissection.....	A	A	A	A	A	A	
Osteology .....	B	B	B	B	B	—	
Materia Medica and Pharmacy	—	—	—	—	—	B	

	<i>Mon.</i>	<i>Tue.</i>	<i>Wed.</i>	<i>Thur.</i>	<i>Fri.</i>	<i>Sat.</i>	
Histology and Embryology...	—	—	A	B	A	B	Second period of 41 working days, from Nov. 23 to Jan. 23 inclusive.
Dissection.....	B	B	B	B	B	B	
Osteology .....	A	A	A	A	A	—	
Materia Medica and Pharmacy	—	—	—	—	—	A	

## ORDER OF INSTRUCTION.

441

## ORDER OF INSTRUCTION, DAILY, AFTER FEB. 1.—FIRST YEAR.—1908-1909.

<i>Hour.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
9 A. M.	Marshall. Physiol. Chem.	Marshall. Physiol. Chem.	Special Work.	Special Work.	Special Work.	Special Work.
10 A. M.	Stevens Medical Terminology, Ethics, etc.					
11 A. M.	Class divided into sections for Pract. Work in Physiol. Chem., and Special Work.	Special Work.	Class divided into sections for Pract. Work in Histology and Embryology and in Physiol. Chem.	Class divided into sections for Pract. Work in Histology and Embryology and in Physiol. Chem.	Class divided into sections for Pract. Work in Histology and Embryology and in Physiol. Chem.	Class divided into sections for Pract. Work in Histology and Embryology and in Physiol. Chem.
12 M.						
1 P. M.						Class divided into sections for Pract. Work in Dissection and Materia Medica and Pharmacy.
2 P. M.	Class divided into sections for Pract. Work in Dissection.	Class divided into sections for Pract. Work in Dissection.	Class divided into sections for Pract. Work in Dissection.	Class divided into sections for Pract. Work in Dissection.	Class divided into sections for Pract. Work in Dissection.	
3 P. M.						
4 P. M.	Piersol. Anatomy.	Piersol. Anatomy.	Marshall. Physiol. Chem.	Piersol. Anatomy.	Piersol. Anatomy.	
5 P. M.	Gymnasium.	Smith. Etiology.	Gymnasium.	Smith. Etiology.	Recitation in Materia Medica.	

See SPECIAL ROSTER for Sections in Practical Work.

## FIRST-YEAR CLASS.

## SPECIAL ROSTER OF PRACTICAL WORK.

## AFTER FEBRUARY 1ST.

THE CLASS IS DIVIDED INTO TWO SECTIONS, DESIGNATED  
RESPECTIVELY A AND B

Histology and Embryology 10 to 1; Medical Chemistry 10 to 1, Monday 11 to 1;  
Dissection 2 to 4, Saturday 1 to 3; Pharmacy 1 to 3

	Mon.	Tue.	Wed.	Thur.	Fri.	Sat.	
Histology and Embryology . . .	—	—	A	B	A	B	First period of 42 working days, from Feb. 1 to March 20 inclusive.
Physiological Chemistry . . . . .	A	—	B	A	B	—	
Dissection . . . . .	A	A	A	A	A	A	
Materia Medica and Pharmacy —	—	—	—	—	—	B	

	Mon.	Tue.	Wed.	Thur.	Fri.	Sat.	
Histology and Embryology . . .	—	—	A	B	A	B	Second period of 40 working days, from Mar. 22 to May 15 inclusive.
Physiological Chemistry . . . . .	A	—	B	A	B	—	
Dissection . . . . .	B	B	B	B	B	B	
Materia Medica and Pharmacy —	—	—	—	—	—	A	

## ORDER OF INSTRUCTION, DAILY, BEFORE FEB. 1.—SECOND YEAR.—1908-1909.

<i>Hour.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
9 A. M.	Class divided into sections for Pract. Work in Physiology and Pathology.	Class divided into sections for Pract. Work in Physiology and Pathology.	Class divided into sections for Pract. Work in Physiology and Pathology.	Class divided into sections for Pract. Work in Physiology and Pathology.	Class divided into sections for Pract. Work in Physiology and Pathology.	Class divided into sections for Pract. Work in Physiology and Pathology.
10 A. M.						
11 A. M.	Stevens. Phys. Diagnosis.	Smith. Pathology.	Berger. Bacteriology.	Recitation in Pathology.	Smith. Pathology.	Smith. Pathology.
12 M.						Class divided into sections for Pract. Work in Dissection.
1 P. M.	Class divided into sections for Pract. Work in Dissection, 1-4.	Class divided into sections for Pract. Work in Dissection, 1-4.	Longscope, Medical Correlation.	Class divided into sections for Pract. Work in Dissection, 1-4.	Class divided into sections for Pract. Work in Dissection, 1-4.	
2 P. M.	Phys. Diagnosis,	Phys. Diagnosis,	Sect. A, 1-2.30.	Phys. Diagnosis,	Phys. Diagnosis,	
	1-2.30.	1-2.30.		1-2.30.	1-2.30.	
3 P. M.	Bandaging,	Bandaging,	Sect. B, 2.30-4.	Bandaging,	Bandaging,	
	2.30-4.	2.30-4.		2.30-4.	2.30-4.	
4 P. M.	Reichert. Physiology.	Reichert. Physiology.		Reichert. Physiology.	Reichert. Physiology.	
5 P. M.		Gymnasium.		Gymnasium.		

See SPECIAL ROSTER for Sections in Practical Work.

## SECOND-YEAR CLASS.

## SPECIAL ROSTER OF PRACTICAL WORK.

## BEFORE FEBRUARY 1ST.

THE CLASS IS DIVIDED INTO TWO SECTIONS, DESIGNATED  
RESPECTIVELY A AND B.Physiology 9 to 11; Pathology 9 to 11; Dissection 1 to 4, Saturday 12 to 2;  
Physical Diagnosis 1 to 2.30; Bandaging 2.30 to 4.

	Mon.	Tue.	Wed.	Thur.	Fri.	Sat.	
Physiology .....	A	B	A	B	A	B	First period of
Pathology .....	B	A	B	A	B	A	42 working
Dissection .....	A	A	A	A	A	A	days, from Oct.
Physical Diagnosis .....	B	B	—	B	B	—	5 to Nov. 21
Bandaging .....	B	B	—	B	B	—	inclusive.
Physiology .....	A	B	A	B	A	B	Second period
Pathology .....	B	A	B	A	B	A	of 41 working
Dissection .....	B	B	B	B	B	B	days, from Nov.
Physical Diagnosis .....	A	A	—	A	A	—	23 to Jan. 23
Bandaging .....	A	A	—	A	A	—	inclusive.

**ORDER OF INSTRUCTION, DAILY, AFTER FEB. 1.—SECOND YEAR.—1908-1909.**

<i>Hour.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
9 A. M.	Class divided into sections for Pract. Work in Physiology and Pathology.	Class divided into sections for Pract. Work in Physiology and Pathology.	Class divided into sections for Pract. Work in Physiology and Pathology.	Class divided into sections for Pract. Work in Physiology and Pathology.	Class divided into sections for Pract. Work in Physiology and Pathology.	Class divided into sections for Pract. Work in Physiology and Pathology.
10 A. M.						
11 A. M.	Piersol. Special Anat. (Section.)	Piersol. Special Anat. (Section.)	Smith. Pathology.	Piersol. Special Anat. (Section.)	Piersol. Special Anat. (Section.)	Smith. Pathology.
12 M.						Class divided into sections for Pract. Work in Dissection.
1 P. M.						
2 P. M.	Class divided into sections for Pract. Work in Dissection and Bacteriology.	Class divided into sections for Pract. Work in Dissection and Bacteriology.	Longcope. Medical Correlation. Sect. A, 1-2.30. Sect. B, 2.30-4.	Class divided into sections for Pract. Work in Dissection and Bacteriology.	Class divided into sections for Pract. Work in Dissection and Bacteriology.	
3 P. M.						
4 P. M.	Reichert. Physiology.	Reichert. Physiology.		Reichert. Physiology.	Reichert. Physiology.	
5 P. M.		Gymnasium.		Gymnasium.		

See SPECIAL ROSTER for Sections in Practical Work.

**SECOND-YEAR CLASS.****SPECIAL ROSTER OF PRACTICAL WORK.****AFTER FEBRUARY 1ST.**

THE CLASS IS DIVIDED INTO TWO SECTIONS, DESIGNATED  
RESPECTIVELY A AND B.

Physiology 9 to 11; Pathology 9 to 11; Special Anatomy 11 to 12.30; Dissection 1.30 to 4, Saturday 12 to 2; Bacteriology 1.30 to 4.

	Mon.	Tue.	Wed.	Thur.	Fri.	Sat.	
Physiology.....	A	B	A	B	A	B	First period of 42 working days, from Feb. 1 to Mar. 20 inclusive.
Pathology.....	B	A	B	A	B	A	
Special Anatomy .....	B	A	—	A	B	—	
Dissection .....	A	A	A	A	A	A	
Bacteriology .....	B	B	—	B	B	—	
Physiology.....	A	B	A	B	A	B	Second period of 40 working days, from Mar. 22 to May 15 inclusive.
Pathology.....	B	A	B	A	B	A	
Special Anatomy .....	B	A	—	A	B	—	
Dissection .....	B	B	B	B	B	B	
Bacteriology .....	A	A	—	A	A	—	

## ORDER OF INSTRUCTION, DAILY.—THIRD YEAR.—1908-1909.

444

## DEPARTMENT OF MEDICINE.

HR.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
9	Derm. in Neuro-Psychiatry. Pathology. (before Feb. 1).	Tyson. Medicine.	Smith. Pathology.	Dem. in Neuro-Psychiatry. Pathology. (before Feb. 1). Derm. in Pharmacos- dynamics. (before Feb. 1). Anatomy.	Dem. in Surgery. Pathology. (before Feb. 1). Derm. in Gross Pathology. Anatomy.	Tyson. Medical Clinic. Clinic. Philadelphia or Pennsylvania Hospital.
10					Dem. in Gross Pathology. Anatomy.	Smith. Pathology.
11						Clinical Surgery.
12						Clinical Surgery. Pathology. (before Feb. 1). Derm. in Gross Pathology. Anatomy.
1						Ward Class in Medicine. Ophthalmal.
2						Ward Class in Medicine. Ophthalmal.
3						Hirst. Obstetrics.
4						Clark. Lantern Dem. in Gynecology.
						Edsall.. Therapeutics.
						DE SCHWEINITZ. Ophthalmic Clinic (before Feb. 1). GRAYSON. Laryngology (after Feb. 1).
						Hirst. Obstetrics.
						EDSALL. Therapeutics.
						DE SCHWEINITZ. Ophthalmic Clinic (before Feb. 1). RANDALL. Otology (after Feb. 1).

## SESSION 1908-1909.

**Schedule of Practical Instruction for Third-Year Class.**

For practical instruction in all subjects the class is divided into three sections (A, B and C), each of which is subdivided into four subsections (as A<sup>1</sup>, A<sup>2</sup>, A<sup>3</sup>, A<sup>4</sup>) for Ward Classes in Medicine. Demonstrations in Neuro-Pathology and Gross Pathology and Pharmacodynamics, 9 to 10.30 A. M.; Applied Anatomy and Surgical Pathology, 10.30 A. M. to 12 M.; Surgical Ward Classes, 1 to 2 P. M. Monday and Thursday, 12 to 1 Friday; Medical Observation, 1 to 2 P. M.; Medical Clinical Laboratory, 2 to 4 P. M.; Ward Classes in Medicine and Ophthalmology, 3 to 4 P. M.

Subject.	Mon.	Tue.	Wed.	Thur.	Fri.	Period.
Neuro-Pathology .....	B	—	C	A	—	First period of 57 working days, from Oct. 5 to Dec. 12 inclusive.
Gross Pathology .....	C	—	A	B	—	
Pharmacodynamics .....	A	—	B	C	—	
Applied Anatomy .....	B	—	C	A	—	
Surgical Pathology .....	C	—	A	B	—	
Surgical Ward Class .....	A&B	—	—	A	B&C	
Medical Observation .....	—	—	—	C	—	
Medical Clinical Laboratory .....	C	A	—	B	—	
Medical Ward Class .....	A	B	—	C	—	
Ophthalmological Ward Class .....	B	C	—	A	—	
Neuro-Pathology .....	C	—	A	B	—	Second period of 56 working days, from Dec. 14 to Feb. 27 inclusive.
Gross Pathology .....	A	—	B	C	—	
Pharmacodynamics .....	B	—	C	A	—	
Practical Therapeutics .....	B	—	C	A	—	
Applied Anatomy .....	C	—	A	B	—	
Surgical Pathology .....	A	—	B	C	—	
Surgical Ward Class .....	B&C	—	—	B	A&C	
Medical Observation .....	—	—	—	A	—	
Medical Clinical Laboratory .....	A	B	—	C	—	
Medical Ward Class .....	B	C	—	A	—	
Ophthalmological Ward Class .....	C	A	—	B	—	Third period of 58 working days, from March 1 to May 15 inclusive.
Gross Pathology .....	B	—	C	A	—	
Practical Therapeutics .....	C	—	A	B	—	
Applied Anatomy .....	A	—	B	C	—	
Surgical Pathology .....	B	—	C	A	—	
Surgical Ward Class .....	A&C	—	—	C	A&B	
Medical Observation .....	—	—	—	B	—	
Medical Clinical Laboratory .....	B	C	—	A	—	
Medical Ward Class .....	C	A	—	B	—	

**SUBSECTIONS OF WARD CLASS IN MEDICINE.**

3 P. M.

	Oct. 5 to Dec. 12.			Dec. 14 to Feb. 27.			Mar. 1 to April 3.			April 5 to May 15.		
	Mon.	Tues.	Thur.	Mon.	Tues.	Thur.	Mon.	Tues.	Thur.	Mon.	Tues.	Thur.
	A <sup>1</sup>	B <sup>1</sup>	C <sup>1</sup>	B <sup>2</sup>	C <sup>2</sup>	A <sup>2</sup>	C <sup>3</sup>	A <sup>3</sup>	B <sup>3</sup>	C <sup>4</sup>	A <sup>4</sup>	B <sup>4</sup>
DR. JUMP .....	A <sup>1</sup>	B <sup>1</sup>	C <sup>1</sup>	B <sup>2</sup>	C <sup>2</sup>	A <sup>2</sup>	C <sup>3</sup>	A <sup>3</sup>	B <sup>3</sup>	C <sup>4</sup>	A <sup>4</sup>	B <sup>4</sup>
DR. PARR .....	A <sup>2</sup>	B <sup>2</sup>	C <sup>2</sup>	B <sup>3</sup>	C <sup>3</sup>	A <sup>3</sup>	C <sup>4</sup>	A <sup>4</sup>	B <sup>4</sup>	C <sup>1</sup>	A <sup>1</sup>	B <sup>1</sup>
DR. FRANCINE .....	A <sup>3</sup>	B <sup>3</sup>	C <sup>3</sup>	B <sup>4</sup>	C <sup>4</sup>	A <sup>4</sup>	C <sup>1</sup>	A <sup>1</sup>	B <sup>1</sup>	C <sup>2</sup>	A <sup>2</sup>	B <sup>2</sup>
DR. KLAER .....	A <sup>4</sup>	B <sup>4</sup>	C <sup>4</sup>	B <sup>1</sup>	C <sup>1</sup>	A <sup>1</sup>	C <sup>2</sup>	A <sup>2</sup>	B <sup>2</sup>	C <sup>3</sup>	A <sup>3</sup>	B <sup>3</sup>

Note: For Schedule of Surgical Dispensary (12 to 1 daily) see Bulletin Board.

## DEPARTMENT OF MEDICINE.

## ORDER OF INSTRUCTION, DAILY.—FOURTH YEAR.—1908-1909.

HR.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
9	Burs. Mental Diseases (before Feb. 1). Abnorm. Hygiene (after Feb. 1).	Tyson. Medicine.	FRAZIER. Clinical Surgery.	MILLS, SPILLER. Clinical Neurology (before Feb. 1). Abnorm. Hygiene (after Feb. 1).	Tyson. Medicine.	Tyson. Medical Clinic.
10	Service in Wards and Dispensaries.	CLARK. Pract. Gynecology.	Service in Wards and Dispensaries.	CLARK. Pract. Gynecology.	Service in Wards and Dispensaries.	Clinic. Philadelphia or Pennsylvania Hospital.
11*	CLARK. Pract. Gynecology.			DUHRING. Orthopedic Clinic (before Feb. 1). STRAHL. Dietetics of the Sick (after Feb. 1).	MUSSEN. Clinical Medicine.	CLINIC. Philadelphia or Pennsylvania Hospital.
12	STENGEL. Clinical Medicine.			DUHRING. Dermatol. Clinic (before Dec. 21). HISAR. Operative and Clinical Obstetrics (after Jan. 1).	Ward Classes. Medical, Surgical, Genito-Urinary.	GARRETT. Pediatric Clinic.
1	Ward Classes. Medical, Surgical, Genito-Urinary.	WHITE. Surgery.	WHITE. Surgical Clinic.	WHITE. Surgery.	Ward Classes. See Schedule of Practical Instruction.	Surgical Clinic.
3	Ward Classes. See Schedule of Practical Instruction.	MILLS, SPILLER. Neurologic Clinic.	Ward Classes. See Schedule of Practical Instruction.	MARTIN. Clinical Surgery.	Ward Classes. See Schedule of Practical Instruction.	
4	EBSALL. Clinical Therapeutics.	DUHRING. Dermatology (before Dec. 21).	MUSSEN, STENGEL. 4.15-5.45 Clinical Conference in Medicine.	DUHRING. Dermatology (before Dec. 21).	MUSSEN, STENGEL. 4.15-5.45 Clinical Conference in Medicine.	OBSTETRICS. See Schedule of Practical Instruction.
5		McCARRAN. Medical Jurisprudence (before Feb. 1). DUNLAP. History of Medicine (after Feb. 1).				

\* Clinic-Pathological Demonstrations, All autopsies at the University Hospital will be made at 11 A.M. Students on duty in the wards will attend with their clinical instructors, who will cooperate with the Pathologist in a combined demonstration.

## RUCTION.

and each student in  
Hospital, are excused

## ESDAY.

14	Mar. 1 to May 15.
27.	
B 5	86-128
B 8	1-42
A 2	43-65
.....	.....
.....	.....
.....	.....
.....	.....
Jan. 25 to Mar. 20.	Mar. 22 to May 15.
.....	.....
45-85	43-85
108-118	110-128
119-128	86-96
86-107	97-118
1-10	11-20
11-20	1-10
21-42	21-42
.....	.....
65-128	65-128
1-64	1-64
.....	.....

ABORATORY, UNIVE

M.

Feb. | Mar.



**ORDER OF INSTRUCTION.**

S	SUBSECTIONS OF WARD CLASS IN MEDICINE.—1 P. M.						April 5 to May 15.					
	Oct. 5 to Dec. 12.			Dec. 14 to Feb. 27.			Mar. 1 to April 3.			Mon. Thur. Fri.		
	Mon.	Thur.	Fri.	Mon.	Thur.	Fri.	Mon.	Thur.	Fri.	Mon.	Thur.	Fri.
DR. TYSON OR DR. FURNESS	1-10	86-96	43-53	54-63	11-20	97-107	108-118	64-74	21-31	119-128	75-85	32-42
DR. NORRIS	11-20	97-107	54-63	64-74	21-31	106-118	119-128	75-85	32-42	86-96	43-53	1-10
DR. KELLY	21-31	108-118	64-74	75-85	32-42	119-128	106-118	43-53	1-10	97-107	54-63	11-20
DR. ALVIN.	32-42	119-128	75-85	43-53	1-10	86-96	97-107	54-63	11-20	108-118	64-74	31-31

S	SUBSECTIONS OF WARD CLASS IN MEDICINE.—3 P. M.						Mar. 22 to May 15					
	Oct. 5 to Nov. 21.			Nov. 23 to Jan. 23.			Jan. 25 to Mar. 20.			Mar. 22 to May 15		
	Mon.	Wed.	Fri.	Mon.	Wed.	Fri.	Mon.	Wed.	Fri.	Mon.	Wed.	Fri.
DR. SAILER.	86-96	1-10	43-53	07-107	11-20	54-63	108-118	21-31	64-74	119-128	32-42	75-85
DR. RIBESMAN	97-107	11-20	54-63	86-96	1-10	43-53	119-128	32-42	75-85	108-118	21-31	64-74

S	SUBSECTIONS OF WARD CLASS IN NEUROLOGY.—3 P. M.						Dec. 14 to Jan. 23.					
	Oct. 5 to Nov. 7.			Nov. 9 to Dec. 12.			Nov. 9 to Dec. 12.			Dec. 14 to Jan. 23.		
	Mon.	Wed.	Fri.	Mon.	Wed.	Fri.	Mon.	Wed.	Fri.	Mon.	Wed.	Fri.
DR. ALLEN, UNIVERSITY HOSPITAL.....	1-14	43-56	86-99	15-28	57-70	100-114	100-114	29-42	71-85	100-114	71-85	115-128
DR. McCONNELL, PHILADELPHIA HOSPITAL.	15-28	57-70	100-114	20-42	71-85	115-128	1-14	43-56	15-28	57-70	43-56	86-99
DR. LUDLUS, PHILADELPHIA HOSPITAL .....	29-42	71-85	115-128	1-14	43-56	86-99	15-28	57-70	100-114	57-70	100-114	447

\* PHILADELPHIA HOSPITAL.

## TEXT-BOOKS.

## Text-Books.

*Physiological Chemistry:* Remsen's Organic Chemistry; Tyson's Practical Examination of Urine; Ogden's Clinical Examination of the Urine; Long's Physiological Chemistry; Hawk's Practical Physiological Chemistry; Mason's Examination of Water.

*Anatomy:* Piersol's Text-book of Anatomy; Piersol's Normal Histology; Cunningham's Practical Anatomy.

*Bacteriology:* Abbott's Principles of Bacteriology; Flügge's Die Mikro-organismen; Günther's Einführung in das Studium der Bakteriologie; Sternberg's Text-book of Bacteriology; Harris' edition of Muir and Ritchie's Manual of Bacteriology; Lehman and Neumann's Atlas of Bacteriology.

*Physiology:* Howell's, Stewart's, Starling's, or Tigerstedt's Physiology.

*Pathology:* For general use, Stengel's Text-book of Pathology or Adam's General and Special Pathology. For aetiology, Rogers' Principles of Medical Pathology; for pathological anatomy and histology, Delafield and Prudden; for pathological physiology,

Collateral Reading.  
Wormley's Micro-chemistry of Poisons. (Fourth edition.)  
Schimpf's Text-book of Volumetric Analysis.  
Hammarsten's Physiological Chemistry.

Cunningham; Gray; Morris; Spalteholz; Sobotta's Histology (edited by Huber); Heisler's Embryology; McMurrich's Embryology.

Enzymes and their Application; Effront; Prescott; Frankland's Micro-organisms in Water; Baumgarten's Pathologische Mykologie; Slater and Spitta's Atlas of Bacteriology; McFarland's Pathogenic Bacteria; Rickett's Infection Immunity and Serum Therapy.

American Text-book of Physiology; Shäfer's Text-book of Physiology; Krehl's Pathologische Physiologie, or the translation by Hewlett-Krehl's Clinical Pathology.

Thoma's General Pathology; Lazarus-Barlow General Pathology; Cohnheim's Lectures on General Pathology; Ziegler's General and Special Pathological Anatomy; Orth's Lehrbuch der speciellen pathologischen Anatomie; Coplin's Manual of Pathology; Mc-

Text-Books.	Collateral Reading.
Krehl's Clinical Pathology and Wells' Chemical Pathology; for pathological technology, Mallory and Wright.	Farland's Text-book of Pathology.
<i>Medicine:</i> Tyson's Text-book of Medicine; Osler; Musser's Medical Diagnosis.	Strumpel's Text of Medicine; Tyson on Bright's Disease and Diabetes; McBride's Diseases of Throat, Nose and Ear; French's Practice of Medicine.
<i>Surgery:</i> An American Text-book of Surgery.	White and Martin's Genito-Urinary Surgery; Davis on Bandaging; Young's Orthopedic Surgery; Martin's Essentials of Surgery and Bandaging.
<i>Obstetrics:</i> Hirst's Text-book of Obstetrics.	Norris' American Text-book of Obstetrics; Edgar's Obstetrics; Webster's Obstetrics; Williams' Obstetrics.
<i>Therapeutics and Materia Medica:</i> H. C. Wood; Mann on Prescription Writing.	United States Dispensatory; Hutchinson's Dietetics; Bruce, Treatment in Practical Medicine.
<i>Applied Anatomy:</i> Thomas' Sylabus of Surgical Anatomy.	Woolsey; Eisendrath; Taylor; Treves; Campbell; Deaver.
<i>Physical Diagnosis:</i> Tyson.	
<i>Nervous Diseases:</i> Pott's Nervous and Mental Diseases.	Mill's Diseases of the Brain and Cranial Nerves, with a General Introduction on the Study and Treatment of Nervous Diseases; Oppenheim's Diseases of the Nervous System, translated by E. E. Mayer; Dana's Text-book of Nervous Diseases; Church and Peterson's Nervous and Mental Diseases; Starr's Nervous Diseases, Organic and Functional.

## Text-Books.

*Gynecology:* Penrose's Text-book of Diseases of Women; Winter's Gynecological Diagnosis.

## Collateral Reading.

Kelley's Operative Gynecology; Reed's Text-book of Gynecology; Montgomery's Text-book of Gynecology; Hirst's Text-book of Gynecology; Gilliam's Text-book of Practical Gynecology.

*Pediatrics:* Ashby and Wright; Holt; Rotch; Coplik; Carr.

*Medical Jurisprudence:*

Reese's Medical Jurisprudence; Herold's Legal Medicine; The Law in its Relations to Physicians, by Taylor; Draper's Medical Jurisprudence.

*Dermatology:* Duhring's Cutaneous Medicine, Parts I and II; Stelwagon's Treatise; Schamberg's Compend.

*Ophthalmology:* de Schweinitz's Diseases of the Eye.

American Text-book of Diseases of the Eye, Ear, Nose and Throat, by de Schweinitz and Randall.

*Hygiene:* Bergey's Principles of Hygiene; Sedgwick's Hygiene and the Public Health; Flügge's Grundriss der Hygiene; Notter's Treatise on Hygiene; Abbott's Hygiene of Transmissible Diseases.

Sykes' Public Health Problems; Bashore's Rural Hygiene; Waring's Modern Methods of Sewage Disposal; Mason's Water Supply; Merriman's Elements of Sanitary Engineering; Rosenau's Disinfection and Disinfectants; Wiley's Foods and their Adulterations.

**BUILDINGS AND EQUIPMENT.****MEDICAL HALL.**

The MEDICAL HALL contains the Laboratories of Histology and Embryology, and Osteo-syndesmology.

The HISTOLOGICAL LABORATORY is under the supervision of the Professor of Anatomy and the Demonstrator of Histology. The Laboratory is furnished with excellent microscopes, and all apparatus necessary to enable the student to become practically familiar with the most approved methods of microscopical technology, as well as with the normal histology of all the tissues and organs. Special facilities are afforded for original research and work in Practical Embryology; for this purpose the Laboratory is open throughout the year except during July and August.

The OSTEO-SYNDESMOLOGICAL LABORATORY is under the supervision of the Professor of Anatomy and Demonstrator of Osteology. In this Laboratory, the first-year student is required to make himself familiar with the skeleton and the articulations as a part of his instruction in practical anatomy.

**LABORATORIES OF PATHOLOGY, PHYSIOLOGY AND PHARMACOLOGY.**

The new LABORATORIES OF PATHOLOGY, PHYSIOLOGY, and PHARMACOLOGY, were formally opened June, 1904. This building is unsurpassed in facilities and equipment for graduate and undergraduate work. The building is two stories in height, above a high basement, and measures 340 feet front by nearly 200 feet in depth. The long front faces north, securing a maximum amount of light for laboratory purposes. All along the front are arranged small rooms for research, rooms for professors and their assistants, libraries, etc., these opening into a private corridor so that those employed in these rooms may be free from interruption by persons passing through the main halls. Perfect lighting of all the laboratories has been obtained through the front or through large courts, which separate the two main parallel groups of rooms.

The first floor of the new laboratory is devoted to physiology and pharmacodynamics. The portion assigned to the former consisting of laboratories for practical instruction, for general research work, for subsection teaching, rooms for the professor and assistants, etc. The section for pharmacodynamics consists of a large

general laboratory, a laboratory for teaching practical pharmacodynamics; rooms for original research, a commodious museum, etc. The second floor is devoted exclusively to pathology, the entire north front being given over to laboratories for advanced students in pathology and pathological bacteriology and to the special research and assistants' rooms. The wings accommodate the laboratory of experimental pathology, the museum, the demonstration-rooms, the laboratory for physiological chemistry and the preparation-rooms. The demonstration-room communicates with the general pathological-histological laboratory, the front of which consists almost entirely of glass and looks north into a spacious court. Another section of this floor, also looking into the court, is subdivided into smaller laboratories for instruction in animal diseases, neuro-pathology and surgical pathology.

Besides numerous laboratories, research-rooms, etc., there are four lecture-rooms in the building, two of these being demonstration-rooms with a seating capacity of 185; the others being lecture-rooms with a seating capacity of 400. The building is entirely fire-proof, of the most modern construction, supplied with power, electric light, and many kinds of accessories for promoting the teaching and research work.

#### LABORATORIES OF CHEMISTRY AND ANATOMY.

The CHEMICAL LABORATORIES occupy the first, second and third floors; on the second floor is the Laboratory of General Chemistry, and on the third floor that of Physiological Chemistry. In addition to the main rooms, there are smaller rooms, provided with an adequate number of balances for quantitative work, and special rooms set apart for research.

The ANATOMICAL LABORATORY is at the top of the building and is 140 feet in length by 40 feet in width. It is lighted with windows on all sides, and by skylights. The most perfect ventilation is thus secured. There are numerous washstands, with hot and cold water, and private closets for the use of each student. Cleanliness is rigidly enforced. The cadavers furnished the dissecting-room are preserved by refrigeration. Dissection is legalized in Pennsylvania.

#### LABORATORY OF HYGIENE.

ALEXANDER C. ABBOTT, M. D., *Director.*

The LABORATORY OF HYGIENE was the gift of Mr. Henry Charles Lea, and the equipment was provided through the munificence of

the late Henry C. Gibson, of Philadelphia. The building is devoted to graduate and undergraduate work in bacteriology and hygiene. The student laboratory is a commodious, well-lighted and heated room, with a seating capacity for eighty-three students. Each student is supplied with an individual microscope, and with such apparatus as is necessary to conduct elementary studies in Bacteriology.

**RESEARCH IN ADVANCED HYGIENE AND BACTERIOLOGY.**—Opportunities for research work in these subjects are offered to those having the requisite preliminary training. All work coming under this head is done under the direct supervision of the laboratory staff.

#### **WISTAR INSTITUTE OF ANATOMY AND BIOLOGY.**

MILTON J. GREENMAN, PH. B., M. D., *Director.*

The WISTAR INSTITUTE, incorporated in 1892 by the University of Pennsylvania and General Isaac J. Wistar, is the first American University Institute devoted to the advanced study and research in anatomy and biology.

Through the munificence of the late General Isaac J. Wistar the Institute was established and endowed not only for the advancement of research anatomy but also for the preservation and increase of the anatomical museum originally known as the Wistar or Wistar and Horner Museum. The original museum founded in 1808 by Professor Casper Wistar was used as a teaching museum for students of medicine in the University of Pennsylvania. Its development along broader lines, since the organization of the Institute, has greatly increased its scientific value both to the medical students of the University and to biological students throughout the country. It has now become the depository for research materials which are open, under suitable regulations, to the use of capable investigators from all Institutions, and through its Advisory Board it has established itself as a central anatomical Institute.

The Museum is open to the public as well as to students daily, except Sundays and Holidays, from 9 A. M. to 4 P. M., Saturdays from 9 A. M. to 12 M.

Well equipped laboratories and a biological library adjoin the museum and every facility is provided here for the work of investigators. The chief resources of the Institute are, at the present time, directed to researches in Comparative Neurology. No under-

graduate teaching is done in the Institute but arrangements can be made with the Professor of Anatomy in the Medical School whereby advanced students or graduates in medicine may be afforded the facilities for research offered by the Wistar Institute.

The Institute publishes the five principal, independent anatomical journals of the United States, namely: *Journal of Morphology*, *The Journal of Comparative Neurology and Psychology*, *The American Journal of Anatomy*, *The Anatomical Record*, and *The Journal of Experimental Zoology*. In these journals appears a large portion of the anatomical research work done in this country.

The museum and laboratory work of the Institute constantly demand the assistance of skillful dissectors, modelers, preparators and draughtsmen. And for this reason unexcelled opportunities are here to be found for a limited number of students desiring to perfect themselves in anatomy or to obtain some income during the college year.

#### WILLIAM PEPPER CLINICAL LABORATORY.

##### *Associates.*

ALFRED STENGEL, M. D., *Director.*

JOHN W. HUNTER, M. D., *Assistant Director.*

SAMUEL S. KNEASS, M. D.,	JOSEPH S. EVANS, JR., M. D.,
CHARLES A. FIFE, M. D.,	DANIEL J. McCARTHY, M. D.,
RALPH S. LAVENSON, M. D.,	THOMAS A. COPE, M. D.

##### *Volunteer Associates.*

JOSEPH SAILER, M. D.,	WILLIAM PEPPER, M. D.,
BENJAMIN A. THOMAS, M. D.,	FRED H. KLAER, M. D.,
MILTON K. MYERS, M. D.,	JOHN SPEESE, M. D.,
JOHN C. GITTINGS, M. D.,	CLIFFORD B. FARR, M. D.

##### *Woodward Fellowship.*

RALPH PEMBERTON, M. D.

The WILLIAM PEPPER LABORATORY OF CLINICAL MEDICINE, erected through the generosity of the late Dr. William Pepper as a memorial to his father, adjoins the University Hospital. The purposes of the Laboratory are: to promote the interests of the patients by providing facilities for the prosecution of minute clinical studies and original researches; and to advance the interests of science by the publication of the results of such work. No instruction in the Laboratory is given to undergraduates.

The Associates and Volunteer Associates of the Laboratory are appointed for the purpose of carrying out certain lines of investigation for which they have special preparation. The Laboratory does not solicit post-graduate teaching, but has received a limited number of post-graduate students from time to time for the purpose of training them to carry on investigations.

The publications of the Laboratory are issued in the form of contributions, which are the collected reprints of articles issued from the Laboratory and published in various medical journals. One or two numbers containing from fifteen to twenty or more separate articles appear each year. A limited number of these may be had by interested persons on application.

#### THE UNIVERSITY HOSPITAL.

ROBERT E. HASTINGS, <i>Chairman</i> , .....	} Executive Committee of Board of Managers.
GEORGE H. McFADDEN, .....	
JOHN SAILER, .....	
CHARLES W. DULLES, M. D., .....	
HENRY S. GROVE, .....	
EDWARD D. TOLAND, .....	
MRS. CHARLES C. HARRISON, .....	
THOMAS G. ASHTON, M. D., .....	<i>Secretary.</i>

The UNIVERSITY HOSPITAL is situated on the University Campus. It is one of the most important agents in the training of the students, an invaluable adjunct to the Department of Medicine, and, together with the Out-Patient Department, furnishes ample provision for the teaching of clinical medicine according to the most approved methods. With accommodation for 350 patients, it also affords excellent facilities for bedside instruction. Members of the faculty are members of the Hospital Staff.

Five positions as resident physicians in the University Hospital are awarded annually to five members of the Graduating Class of the Department of Medicine, selected from the twenty-five members of the class who have the highest general average at the end of the third year of the course.

The MATERNITY PAVILION, with a capacity of 50 beds, comprises a main building, to which the patients are admitted two weeks before delivery, two wings containing delivery-rooms, and the ANNA DIKE SCOTT Amphitheatre. This department is under the charge

of the Professor of Obstetrics. Under the supervision of the clinical staff, the students assist in cases of labor and make daily visits, during the puerperium, to the mother and child.

#### LIBRARY FACILITIES.

The basis of the Medical Section of the University Library is formed by the Stillé Collection, presented by the late Alfred J. Stillé, to which additions have been made from the William Pepper Medical Foundation, established by the late Dr. William Pepper. In addition to purchases, the Medical Section has grown considerably through gifts presented by a number of medical publishers, more particularly Messrs. W. B. Saunders, Lea Brothers, the J. B. Lippincott Company and P. Blakiston's Son & Co. From most of these are received regularly the new publications issued by them. A third source contributing to the increase of the Library is the arrangement made with the *University of Pennsylvania Medical Bulletin*, by which some forty medical periodicals received in exchange are forwarded regularly to the University Library and incorporated into the medical collection. In addition to these the University subscribes to about 100 medical periodicals, which, together with those received through the *University of Pennsylvania Medical Bulletin*, represent a choice selection of the leading medical periodicals of this country and Europe. A special fund recently placed at the disposal of the Medical Section has enabled the authorities to complete the sets of all the more important periodicals and publications of medical societies.

The PEPPER MEDICAL ACOVE contains sets of the more important medical periodicals, general reference works covering the various departments of medicine and surgery, text-books, serial publications and all the more important new medical books received at the University.

DEPARTMENTAL LIBRARIES.—A Departmental Library in Physiology has been established, in which are on file all of the important current periodicals on general and special Physiology. Similar Libraries in Pathology and Pharmacology are being organized. These Libraries are accessible to the students under the same rules or regulations as are in effect in the General Library.

LIBRARY OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.—In addition to the Medical Section of the University Library, students have access to the Library of the College of Physicians, the second largest medical library in the United States.

**GENERAL INFORMATION.****ARRANGEMENT OF SESSION.**

The academic year consists of one session, beginning on the last Friday in September, and ending at Commencement on the third Wednesday in June.

**TUITION FEES AND EXPENSES.**

Under no circumstances are any changes made in the established fees. The only free scholarships granted are those under the regulations hereinafter referred to.

*First Year.*

Matriculation Fee .....	\$5 00
For General Tuition Ticket, admitting to all the lectures, and including all the laboratory work and dissection assigned to this year .....	\$200 00
Use of Dissecting Material ( <i>two parts</i> ) .....	\$1.50 a part.
Gymnasium and Houston Club Fee .....	\$10 00

*Second Year.*

For General Tuition Ticket, admitting to all the lectures, and including all the laboratory work and dissection assigned to this year .....	\$200 00
Use of Dissecting Material ( <i>two parts</i> ) .....	\$1.50 a part.
Gymnasium and Houston Club Fee .....	\$10 00

*Third Year.*

For General Tuition Ticket, admitting to all the lectures and practical courses assigned to this year ..	\$200 00
Gymnasium and Houston Club Fee .....	\$10 00

*Fourth Year.*

For General Tuition Ticket, admitting to all the lectures and the practical courses assigned to this year (no graduation fee) .....	\$200 00
Use of Material for operations in Surgery ( <i>one part</i> ) ..	\$1.00 a part.
Gymnasium and Houston Club Fee .....	\$10 00

**FEES FOR SPECIAL COURSES.**

(*Students taking special or partial courses, if not already matriculated, or if not graduates of the School, are required to pay the matriculation fee in addition to the fees named below.*)

For any single Course of Lectures, except Materia Medica ..	\$20 00
For the Course of Lectures on Materia Medica .....	10 00
For Practical Course in the Chemical Laboratory .....	25 00
For the Course in Practical Gynecology of the fourth year .	25 00
For any one of the remaining Practical Courses .....	15 00

Graduates in Medicine of this University are admitted to the courses free of charge; but they are required to pay for any laboratory material which they may use.

#### RULES IN RELATION TO FEES.

All payments should be made to W. O. Miller, Bursar, Room 102, College Hall.

A matriculation fee of \$5.00 must be paid by all new students in the department, whether previously registered in another department or not.

Every student shall upon entering the University make a deposit of \$10.00 to cover loss, damage, or breakage of University property, library fines, or any charge not paid by the student in some other way. A student whose deposit is by charges against it reduced to \$2.50 or less shall be required to pay a sum sufficient to restore the deposit to its original amount. No deposit or balance remaining on a deposit shall be finally repaid to a student until he shall have been graduated or shall have formally withdrawn from the University.

A student who repeats the studies of the year will be required to pay the full tuition fee.

#### ALLOWANCES IN CASE OF WITHDRAWAL, ETC.

A student who leaves the University within thirty days after the beginning of either the first or second term, and who shall have paid the full term's tuition fees may receive a return of one-half of the tuition fees paid, but in no case shall the matriculation fee be returned.

#### EXAMINATIONS.

*First Year.*—The mid-year examination in Anatomy (including Osteology, Syndesmology, Myology, and such other subjects as may have been covered by the lectures on Anatomy before February 1), and examination in Materia Medica and Pharmacy will be held about February 1.

Final examinations at end of year: Physiological Chemistry, Anatomy (excepting the Central Nervous System and the Organs of Special Sense), and Pathology.

*Second Year.*—Examinations in Pathology, Physical Diagnosis, and the mid-year examination in Physiology (on the subjects covered by the lectures on Physiology before February 1), will be held about February 1.

Final examinations at end of year: Anatomy (including the Central Nervous System, the Organs of Special Sense and Special Regions), Physiology (on the subjects of the lectures delivered after February 1), and Bacteriology.

*Third Year.*—Examination in Ophthalmology will be held about February 1.

Final examinations at end of year: Medicine, Surgery, Obstetrics, Therapeutics, Gross Pathology and Applied Anatomy.

*Fourth Year.*—Examination in Dermatology will be held about January 3.

Final examinations at end of year: Medicine, Surgery, Obstetrics, Gynecology, and Hygiene. The examinations include questions on Diseases of the Ear, Children's Diseases, and Neurology, from lists furnished by the Clinical Professors of those branches.

#### GRADUATION.\*

At the end of the fourth year a student who has passed all the required examinations satisfactorily will receive the degree of Doctor of Medicine under the following provisions:

1. He must be 21 years of age, and of good moral character.
2. He must have passed satisfactory examinations in all of the required branches of the curriculum, must have attended the practical instruction in all departments, and his last year of instruction must have been at this school.

\* The Department of Medicine of the University of Pennsylvania is recognized by the Royal College of Physicians, London, and by the Royal College of Surgeons, England, to the extent that its graduates are exempt from the first examination and are admitted to the second and third examinations of the joint examining board, upon the following basis:

They must exhibit their diploma, together with evidence of having passed an approved preliminary examination in general education; and they must also present evidence of five years' professional study, and certificates to show that the curriculum required by the examining board has been substantially fulfilled.

Further information may be obtained from FREDERIC G. HALLETT, M. L., Secretary, Examination Hall, Victoria Embankment, London, W. C., England.

Graduates of the Department of Medicine of the University of Pennsylvania are also admitted, on presentation of the diploma and certificates to verify the curriculum, together with evidence of a satisfactory preliminary examination or degree in Arts, to the final examination for the triple qualification of the Royal Colleges of Physicians and Surgeons of Edinburgh, and Faculty of Physicians and Surgeons of Glasgow.

3. He must have attended at least two cases of Obstetrics.
4. He must be present at Commencement, unless excused by the Dean of the Faculty.

#### SCHOLARSHIPS.

A competitive examination of candidates to fill three free scholarships is held annually. (In 1909, on Monday, September 20, at 10 A. M., in the New Medical Laboratories). Each candidate will be required:

*First.* To satisfy the entrance requirements as stated on pp. 382-98.

*Second.* To furnish satisfactory evidence in writing, from three reputable persons, that he is without means to defray the expenses of a medical education.

*Third.* To write a brief autobiography of about 300 words in length, which will serve as a test of his qualifications in orthography and grammar. This is to be written on Monday, September 21, at 10 A. M.

*Fourth.* To undergo examinations in the following subjects:

1. Any two of the four languages:

(a) Latin (third book of Horace's *Odes*).  
(b) Greek (first four books of the *Iliad*). The examination will include prosody, syntax and Homeric dialect.

(c) French.—Elementary French, including grammar, prose composition (Joyne's *Minimum French Grammar and Reader*), and reading at sight in the following books:

Francisque Sarcey, *Le Siège de Paris*.

Beaumarchais, *Le Barbier de Séville*.

Anatole France, *Le crime de Sylvestre Bonnard*.

(d) German.—Elementary German, including Learned's *German Grammar*, Wesselhoeft's or Harris' *Prose Composition*, and reading at sight in the following books:

Heine's *Harzreise*.

Eichendorff's *Aus dem Leben eines Taugenichts*.

Wildenbruch's *Das edle Blut*.

2. Physics.

3. Solid Geometry.

*Fifth.*—To pay an examination fee of \$5.00, which is not returned, but is accepted as the matriculation fee in case the candidate is successful.

The application of candidates who propose presenting themselves for examination, together with the certificates demanded by the second requirement of the competition, must be in the hands of the Dean before September 10. This requirement having been complied with, candidates will appear without further notice at the time stated for examinations.

#### PRIZES TO BE AWARDED, JUNE, 1909.

*NOTE.—Theses and Reports in competition for Prizes must be presented to the Dean on or before May 1. Prizes will not be awarded unless the work submitted reaches a high standard of excellence.*

The ALUMNI MEDAL is offered by the Society of the Alumni of the Department of Medicine of the University, to the member of the Graduating Class who attains the highest general average in examinations. (Only those members of the Graduating Class who have taken the last three years of the course in Medicine at this University are eligible.)

The DR. SPENCER MORRIS PRIZE.—The annual income, derived from the investment of Ten Thousand Dollars, will be awarded each year to that Medical Student of the Graduating Class who shall pass the best examination for the degree of Doctor of Medicine.

The FREDERICK A. PACKARD Prize of One Hundred Dollars is offered by a friend of the University to the member of the Graduating Class who has proven himself to be the most proficient in the course in Clinical Medicine.

The Professor of Obstetrics offers a Prize of an Obstetrical Forceps to the member of the Graduating Class who furnishes the best report of a case of Obstetrics occurring in the University Maternity Hospital.

The Clinical Professor of Orthopedic Surgery offers a Prize of an Antiseptic Minor Operating Case for the best practical work in Orthopedic Surgery, or for the best report of his clinic, or for an acceptable original design in apparatus.

A prize of Seventy-five Dollars will be awarded to a member of the Third-Year Class presenting on or before the Second Annual Meeting of the Undergraduate Medical Association, 1909, the best essay based upon the results of original investigation in Surgical Anatomy, Surgical Pathology, or Surgical Physiology. The observations may be made upon patients in the surgical service of the University Hospital, upon the material in the Anatomical Laboratory, Laboratory of Surgical Pathology, or of Experimental Surgery.

## APPOINTMENTS TO HOSPITALS.

The following graduates of the Department of Medicine, Class of 1908, arranged in alphabetical order, were the successful candidates in competitive examinations for positions as Resident Physicians in the various Hospitals:

## UNIVERSITY HOSPITAL:

Austin, J. H.  
Howell, A. A.  
Kennon, W. G.  
Pepper, O. H. P.  
Van Valzah, R.  
Willard, DeF. P.

## PHILADELPHIA HOSPITAL:

Alford, J. S.  
Breskman, L.  
Cornfeld, M.  
Dunn, J. F.  
Ganter, W.  
Gracey, G. F.  
Hanson, L. E.  
Kolmer, J. A.  
Pearson, R. G.  
Robinson, D. B.  
Rutberg, J. J.  
Schmidt, W. H.  
Skelton, R.  
Wexlar, S.

## GERMAN HOSPITAL:

Diefenderfer, A. L.  
Kinard, K. W.  
Kinney, L. C.  
Whipple, E. R.

## ST. AGNES HOSPITAL:

Mundy, L. C.  
Schadt, G. L.

## ST. MARY'S HOSPITAL:

McDermott, B. A.

## EPISCOPAL HOSPITAL:

Allen, L.  
Gracey, G. F.  
Lenderman, E. H.  
Lüders, C. W.  
Shaw, J. J., Jr.  
Skelton, R.

## ST. TIMOTHY'S HOSPITAL:

Harvey, H. T., Jr.  
Hays, C. E.

## MT. SINAI HOSPITAL:

Greenblatt, J. J.

## HOWARD HOSPITAL:

Buckner, C. McV.  
Donnelly, J. F.  
Hudson, F. E.

## METHODIST EPISCOPAL HOSPITAL:

Bailey, W. H.  
Miller, H. B.  
Morss, C. R.  
Schaeffer, R. L.  
Smith, C. E., Jr.  
Spicer, F. W.

## GERMANTOWN HOSPITAL:

Hersh, H. E.  
Saxon, G. J.  
Whitham, J. D.

## PENNSYLVANIA HOSPITAL:

Krumbhaar, E. B.  
Morris, H. H.

**GARRETSON HOSPITAL:**

Worley, J. F.

**ST. VINCENT'S HOME:**

McNierney, F. B.

**PRESBYTERIAN HOSPITAL:**

DeWitt, W. A.

Sutter, C. C.

Weidman, F. D.

**JEWISH HOSPITAL:**

Cornfield, M.

Davis, A. G.

Goldsmith, S. B.

**ST. JOSEPH'S HOSPITAL:**

DeWald, G. L.

Fleitas, J.

McNierney, F. B.

Robinson, D. B.

**ST. CHRISTOPHER'S HOSPITAL:**

DeWald, G. L.

Robinson, D. B.

Schadt, G. L.

**SAMARITAN HOSPITAL:**

Gorrell, J. F.

**FRANKFORD HOSPITAL:**

Troutman, H. F.

**MUNICIPAL HOSPITAL:**

Pearson, R. G.

**KENSINGTON HOSPITAL:**

Troutman, H. F.

**DOUGLAS HOSPITAL:**

Truitt, B. C.

**BRYN MAWR HOSPITAL, BRYN****MAWR:**

Howard, H. J.

**COLUMBIA HOSPITAL, PITTSBURG,  
PA.:**

Davis, R. C.

Gorrell, J. F.

**MERCY HOSPITAL, PITTSBURG, PA.**

Canning, C. H.

Purvis, J. D.

**ALLEGHENY GENERAL HOSPITAL,  
ALLEGHENY, PA.:**

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Murphy, A. I.

**WEST PENN HOSPITAL, PITTS-  
BURG, PA.:**

Albaugh, C. J.

Davis, R. C.

Rickenbrode, C. O.

**PASSAVANT HOSPITAL, PITTSBURG,  
PA.:**

Luther, J. M

Shaffer, F. B.

**McKEESPORT HOSPITAL, MCKEES-  
PORT, PA.:**

Gorrell, J. F.

Hodgson, W. E.

Longmire, T. R.

**LANCASTER GENERAL HOSPITAL,  
LANCASTER, PA.:**

Snyder, A. F.

**ST. JOSEPH'S HOSPITAL, LANCA-  
TER, PA.:**

Dengler, R. A.

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Howard, H. J.	Simmonds, H. T.
Stires, F. T.	
CHESTER HOSPITAL, CHESTER, PA.:	ALLENTOWN HOSPITAL, ALLEN- TOWN, PA.:
Armitage, H. M.	Schaeffer, F. G.
Egbert, W. E.	Schumacher, F. L.
CHESTER COUNTY HOSPITAL, WEST CHESTER, PA.:	ADRIAN HOSPITAL, PUNXSUTAW- NEY, PA.:
Watson, W. R.	Sutter, C. C.
WILKESBARRE HOSPITAL, WILKESBARRE, PA.:	MONONGAHELA HOSPITAL, MON- ONGAHELA, PA.:
Molyneux, S. D.	Tinker, J. S.
MERCY HOSPITAL, WILKES- BARRE, PA.:	NORRISTOWN HOSPITAL, NORRIS- TOWN, PA.:
Mundy, L. C.	Davis, A. G.
PHOENIXVILLE, HOSPITAL, PHOENIXVILLE, PA.:	ST. JOSEPH'S HOSPITAL, READ- ING, PA.:
Hunlock, F. S.	French, G. R. W.
Pike, P. C.	Kinney, L. C.
WILLIAMSPORT HOSPITAL, WIL- LIAMSPORT, PA.:	DELAWARE HOSPITAL, WILMING- TON, DEL.:
Magee, H. B.	Weidman, F. D.
Moyer, J.	Worley, J. F.
Muhlenberg, H. H.	
HARRISBURG HOSPITAL, HARRIS- BURG, PA.:	HARTFORD CITY HOSPITAL, HART- FORD CITY, CONN.:
Rahter, J. H.	Scott, M. E.
	Walsh, D. J.
READING HOSPITAL, READING, PA.:	BRIDGEPORT HOSPITAL, BRIDGE- PORT, CONN.:
Bankes, C. W.	Pratt, J. M.

ST. LUKE'S HOSPITAL, NEW YORK	Snyder, A. F. Van Valzah, R. Watson, W. R.
CITY:	
Magnuson, P. B.	
GOUVERNEUR HOSPITAL, NEW YORK CITY:	MERCER MEMORIAL HOME FOR INVALID WOMEN, ATLANTIC CITY, N. J.:
Weigle, H. S.	Kinard, K. W.
NORWEGIAN HOSPITAL, BROOKLYN, N. Y.:	CHILDREN'S SEASHORE HOSPITAL, ATLANTIC CITY, N. J.:
Gould, J. H.	Van Valzah, R. Whipple, E. R.
KINGS COUNTY HOSPITAL, BROOKLYN, N. Y.:	MUHLENBERG HOSPITAL, PLAINFIELD, N. J.:
Norstedt, J. A.	Hansell, M. T.
ST. FRANCIS HOSPITAL, TRENTON, N. J.:	MINNEQUA HOSPITAL, PUEBLO, COLO.:
Vila, R. L.	Alford, J. S.
COOPER HOSPITAL, CAMDEN, N. J.:	ST. PAUL CITY AND RAMSEY COUNTY HOSPITAL, ST. PAUL, MINN.:
Hollinshed, R. K.	Abbott, J. S.
Kinney, L. C.	Smith, C. E., Jr.
NEWARK GERMAN HOSPITAL, NEWARK, N. J.:	ST. JOSEPH'S HOSPITAL, ST. PAUL, MINN.:
Derivaux, J. A.	Magnuson, P. B. Smith, C. E., Jr.
ST. FRANCIS HOSPITAL, JERSEY CITY, N. J.:	PATerson GENERAL HOSPITAL, PATERSON, N. J.:
Fenerty, V. J.	PUBLIC HEALTH MARINE HOSPITAL, BALTIMORE, MD.:
ATLANTIC CITY HOSPITAL, ATLANTIC CITY, N. J.:	Carter, H. R.
Schmidt, W. H.	ST. VINCENT'S HOSPITAL, NORFOLK, VA.:
Skelton, R.	Carter, H. R.

AUGUSTANA HOSPITAL, CHICAGO, SAN THOMAS HOSPITAL, PAN-  
ILL.: MA:

Magnuson, P. B. Carter, H. R.

MERCY HOSPITAL, SIOUX CITY, CIVIL SERVICE HOSPITAL, MA-  
IOWA: NILA, P. I.:

McDermott, B. A. Laygo, P.  
Pearson, R. G. Sison, A. G.

SOUTHERN CITY HOSPITAL, SAC-

RAMENTO, CAL.: HOPKINS MEMORIAL HOSPITAL,  
Pearson, R. G. PEKING, CHINA:  
Mullowney, J. J.

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**J. WILLIAM WHITE, M. D.,    JAMES TYSON, M. D.**

### **ON THE PART OF THE MEDICAL ALUMNI.**

**SAMUEL D. RISLEY, M. D.**

### **ON THE PART OF THE BOARD OF WOMEN VISITORS.**

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### MEDICAL STAFF OF THE UNIVERSITY HOSPITAL.

#### *Medicine.*

JAMES TYSON, M. D., ..... Professor of Medicine.

JOHN H. MUSSER, M. D., ..... Professor of Clinical Medicine.

ALFRED STENGEL, M. D., ..... Professor of Clinical Medicine.

DAVID L. EDSELL, M. D., ..... Professor of Therapeutics.

M. HOWARD FUSSELL, M. D., ..... } Assistant Professors.  
ALOYSIUS O. J. KELLY, M. D.,..... }

ROLAND G. CURTIN, M. D., ..... }  
T. MELLOR TYSON, M. D., ..... } Assistant Physicians.  
WILLIAM PEPPER, M. D., ..... }

JOSEPH SAILER, M. D., .....

JOSEPH S. EVANS, M. D., .. Registrar to the Professor of Medicine.

#### *Surgery.*

J. WILLIAM WHITE, M. D., ..... Professor of Surgery.

EDWARD MARTIN, M. D., ..... Professor of Clinical Surgery.

CHARLES H. FRAZIER, M. D., ..... Professor of Clinical Surgery.

ALFRED C. WOOD, M. D., ..... Assistant Professor of Surgery.

T. TURNER THOMAS, M. D., .....

J. BERTON CARNETT, M. D., ..... } Assistant Surgeons.

GEORGE P. MÜLLER, M. D., .....

E. S. ELIASON, M. D., .....

J. J. A. VAN KAATHOVEN, M. D., ..... Anesthetizer.

#### *Obstetrics.*

BARTON COOKE HIRST, M. D., ..... Professor of Obstetrics.

RICHARD C. NORRIS, M. D., ..... Assistant Professor of Obstetrics.

WILLIAM R. NICHOLSON, M. D., .....  
 JOHN C. HIRST, M. D., ..... } Assistant Obstetricians.  
 LEON F. LUBURG, M. D., .....  
 EDWARD W. BEACH, M. D., ..... Anesthetizer.

---

*Neurology.*

CHARLES K. MILLS, M. D., ..... Professor of Neurology.  
 WILLIAM G. SPILLER, M. D., ..... Professor of Neuro-Pathology.  
 J. W. McCONNELL, M. D., ..... } Assistant Neurologists.  
 ALFRED R. ALLEN, M. D., .....  
 S. D. W. LUDLUM, M. D., ..... Registrar to the Professor of Neurology.

---

*Gynecology.*

JOHN G. CLARK, M. D., ..... Professor of Gynecology.  
 HENRY D. BEYEA, M. D., ..... } Assistant Gynecologists.  
 BROOKE M. ANSPACH, M. D., .....  
 EVERETT P. BERNARD, M. D., ..... Anesthetizer.

---

*Orthopedic Surgery.*

DR FOREST WILLARD, M. D., ..... Professor of Orthopedic Surgery.  
 JAMES K. YOUNG, M. D., ..... Associate in Orthopedic Surgery.  
 WALTER G. ELMER, M. D., .....  
 JOSEPH M. SPELLISSY, M. D., ..... } Assistant  
 CHARLES A. WORDEN, M. D., ..... Orthopedic Surgeons.  
 CHARLES A. WORDEN, M. D., ..... Anesthetizer.

---

*Ophthalmology.*

GEORGE E. DE SCHWEINITZ, M. D., .. Professor of Ophthalmology.  
 JOHN T. CARPENTER, M. D., ..... } Assistant  
 EDWARD A. SHUMWAY, M. D., ..... Ophthalmic Surgeons.

---

*Dermatology.*

LOUIS A. DUHRING, M. D., ..... Professor of Dermatology.  
 MILTON B. HARTZELL, M. D., ..... Associate in Dermatology.

## HOSPITAL.

*Laryngology and Rhinology.*

CHARLES P. GRAYSON, M. D., Clinical Professor of Laryngology and Rhinology.

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*Otology.*

B. ALEXANDER RANDALL, M. D., Clinical Professor of Diseases of the Ear.

RALPH BUTLER, M. D., ..... Assistant Aural Surgeon.  
DUNCAN L. DESPARD, M. D., ..... Anesthetizer.

---

*Diseases of Children.*

J. P. CROZER GRIFFITH, M. D., Clinical Professor of Diseases of Children.

MAURICE OSTHEIMER, M. D., .....	Assistants.
J. CLAXTON GITTINS, M. D., .....	
HOWARD C. CARPENTER, M. D., .....	
CHARLES A. FIFE, M. D., .....	

---

*Genito-Urinary Diseases.*

THOMAS R. NEILSON, M. D., Clinical Professor of Genito-Urinary Diseases.

E. HOLLINGSWORTH SITER, M. D., .....	Assistants.
ALEXANDER A. UHLE, M. D., .....	

---

*Pathology.*

ALLEN J. SMITH, M. D., ..... Professor of Pathology.

RALPH S. LAVENSON, M. D., ..... Assistant Pathologist.

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*X-Ray Department.*

HENRY K. PANCOAST, M. D., ..... Skiographer.

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*Department of Photography and Anthropometry.*

JOSEPH M. SPELLISSY, M. D., ..... Photographer.

**MEDICAL STAFF OF THE OUT-PATIENT DEPARTMENT.***Medical Dispensary.*

M. HOWARD FUSSELL, M. D., .....	Physician in Charge.
HENRY D. JUMP, M. D., .....	
ALBERT P. FRANCINE, M. D., .....	
CLIFFORD B. FARR, M. D., .....	
WARFIELD T. LONGCOPE, M. D.,.....	
MYER SOLIS-COHEN, M. D..	
GEORGE T. LUKENS, M. D., .....	
ROBERT S. McCOMBS, M. D., .....	
HOWARD K. HILL, M. D., .....	
HARVEY E. SCHOCK, M. D.,.....	
E. C. BENDER, M. D.,.....	
CHARLES FOX, M. D., .....	
DANIEL M. HOYT, M. D.,.....	
EDWARD H. GOODMAN, M. D.,.....	
LINTON TURNER, M. D.,.....	
ISAAC H. JONES, M. D.,.....	
LUCIUS TUTTLE, M. D.,.....	
GEORGE MILLS BOYD, M. D., .....	

Assistant Physicians.

Microscopists.

*Surgical Dispensary.*

JOHN SPEESE, M. D.,.....	Surgeon in Charge.
EDWARD Y. RICH, M. D., .....	
BENJAMIN A. THOMAS, M. D.,.....	
FREDERICK PRIME, JR., M. D., .....	

Assistant Surgeons.

*Maternity Dispensary.*

L. F. LUBURG, M. D., .....	Surgeon in Charge.
EDWARD W. BEACH, M. D., .....	
N. L. KNIFE, M. D.,.....	
WILLIAM G. MOORE, M. D., .....	

Assistant Surgeons.

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WILLIAM B. SMALL, M. D., ..... Surgeon in Charge.  
 EDWOOD FLOYD KEENE, M. D., ..... } Assistant Surgeons.  
 STERLING W. MOORHEAD, M. D., ..... }

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*Dispensary for Genito-Urinary Diseases.*

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 ALEXANDER A. UHLE, M. D., ..... } Assistant Surgeons.  
 WILLIAM R. BREADY, JR., M. D., ..... }  
 WILLIAM H. MACKINNEY, M. D., ..... }

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JAMES K. YOUNG, M. D., ..... Surgeon in Charge.  
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 THOMAS O'HARA, M. D., ..... }  
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 A. N. BAGGS, M. D., ..... }  
 SAMUEL LEOPOLD, M. D., ..... }  
 M. S. YAWGER, M. D., ..... } Assistant Physicians.  
 A. H. WOODS, M. D., ..... }  
 JOHN J. REPP, M. D., ..... }  
 PAUL H. BIKLÉ, M. D., ..... }

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MAURICE OSTHEIMER, M. D., ..... Physician in Charge.  
 HERMAN SCHWATT, M. D., ..... Assistant Physician.

---

*Dispensary for Diseases of the Eye.*

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EDWARD A. SHUMWAY, M. D., .....	
THOMAS B. HOLLOWAY, M. D., .....	Assistant Surgeons.
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H MAXWELL LANGDON, M. D., .....	
BENJAMIN F. BAER, JR., M. D., .....	
CHARLES M. HOSMER, M. D., .....	
J. E. RHOADS, M. D., .....	

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*Dispensary for Diseases of the Ear.*

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DUNCAN L. DESPARD, M. D., .....	Assistant Surgeons.
BENJAMIN D. PARISH, M. D., .....	

---

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BENJAMIN L. SINGER, M. D., .....	Chief Assistant.
WALTER S. HARGETT, M. D., .....	Assistant Physicians.
P. SAMUEL STOUT, M. D., .....	
JOHN J. REPP, M. D., .....	

---

*Dispensary for Diseases of the Skin.*

MILTON B. HARTZELL, M. D., .....	Physician in Charge.
FRANK C. KNOWLES, M. D., .....	Assistant Physician.

## INTERNES FOR YEAR 1907-08

*Chief Resident Physician.*

ROBERT G. TORREY, M. D.

*Resident Physicians.*

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FREDERICK PRIME, Jr., M. D.	ROBERT W. VIEHE, M. D.,
JOHN L. LAIRD, M. D.,	J. HAROLD AUSTIN, M. D.,
NELSON W. JANNEY, M. D.,	O. H. PERRY PEPPER, M. D.,
WILLIAM T. PRIDE, M. D.,	JOHN H. MUSSER, Jr., M. D.,
A. LEE CLIFTON, M. D.,	DEFORREST P. WILLARD, Jr., M. D.,
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BORDEN S. VEEDER, M. D.,	CHARLES N. STURTEVANT, M. D.,
CALVIN C. RUSH, M. D.,	SILAS D. MOLYNEUX, M. D.,
GEORGE L. DE SCHWEINITZ, M. D.,	WILLIAM G. KENNON, M. D.,
GEORGE L. LAWRENCE, M. D.,	J. PARSONS SCHABFFER, M. D.,
CHARLES N. HOLCOMB, M. D.	

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The UNIVERSITY HOSPITAL is under the immediate direction of a Board of Managers, constituted as stated above. It is situated on a lot of ground extending from Thirty-fourth to Thirty-sixth streets, and from Spruce to Pine streets—Pine Street itself being practically a part of the Hospital ground, as the beautiful Hamilton Walk extends from 34th Street to 39th Street. The main building of the Hospital and one wing were opened for the reception of patients and for purposes of clinical instruction in 1874.

The Hospital buildings are large and admirably adapted to their purposes: a place for the treatment of the sick and suffering, and for the instructions and demonstrations that are here a part of the training of the students in the Department of Medicine of the University. The wards, amphitheatres and dispensaries are commodious, well lighted, well heated and well ventilated. There is accommodation for about 300 patients in the wards, and the Dispensaries have cared for over 12,000 patients in the last year and more than a quarter of a million patients since the Hospital was opened in 1874.

The GIBSON Wing for Chronic Diseases, especially of the heart and lungs, was erected in 1883 through the liberality of the late

**Henry C. Gibson.** Here unusual opportunities are afforded for the study of these important affections.

The D. HAYES AGNEW Memorial Pavilion, dedicated in 1897, comprising four large wards, and one large and two small clinic amphitheatres, is largely used for clinical instruction.

The Maternity Pavilion is separate from the main building. The amphitheatre in connection with it was completed in 1901, and has a seating capacity of two hundred.

The WILLIAM PEPPER Laboratory of Clinical Medicine, erected through the generosity of the late Dr. William Pepper as a memorial to his father, is a part of the Hospital building. The purposes of the Laboratory are: to promote the interests of the patients by providing facilities for the prosecution of minute clinical studies and original researches, and to advance the interests of science by the publication of the results of such work. No instruction in the Laboratory is given to undergraduates.

The main Hospital building contains the offices and the rooms of the officers, and had added to it in 1908 a large and beautiful room, used as a ward for students of the University, and suites of handsome rooms, furnished with every modern convenience, for private patients.

The wing adjoining has four wards with a capacity of one hundred and ten patients, and twenty-one private rooms. The wing for Chronic Diseases has room for sixty-two patients in its four wards. There is, therefore, with the Agnew wing and the Maternity, full accommodation for three hundred patients. On the ground floor are surgical and medical dispensaries, also special dispensaries for diseases of the throat and nose, diseases of children, diseases of the skin, diseases of the eye and ear, nervous diseases, maternity cases, orthopedics, etc. In connection with the Orthopedic Dispensary is a workshop, in which braces and other appliances are made.

Beside these, the Hospital is furnished with a fine X-ray laboratory supplied with apparatus for every form of examination and treatment in this department, and a laboratory for anthropometry and photography.

Important additions to the Hospital building, begun in 1908 and now nearly completed, will add very much to its facilities for the treatment of patients and for clinical instruction.

Communications regarding the business of the Hospital and the admission of patients, should be addressed to the Superintendent, Miss Marion E. Smith.

## TRAINING SCHOOL FOR NURSES.

The Training School for Nurses, attached to the Hospital of the University, was organized in 1886. In that year a HOME FOR NURSES was erected in memory of Mrs. Richard D. Wood by her children, and it has since been considerably enlarged. The building was completely furnished by the women members of the Training School Committee, and every provision is made for the healthful and comfortable home life of the pupil nurses. Owing to the increased size of the Hospital, more nurses have become necessary, and to lodge them properly a large addition to the Nurses' Home has been built. The course of instruction covers a period of three years.

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*All communications relating to the School for Nurses should be addressed:*

Assistant Superintendent and Directress of Nurses,  
University Hospital, 3400 Spruce St., Philadelphia.

## **DEPARTMENT OF DENTISTRY.**

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### **FACULTY.**

**CHARLES C. HARRISON, LL. D., PROVOST.**

**EDGAR F. SMITH, PH. D., Sc. D., LL. D., VICE-PROVOST.**

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**EDWIN T. DARBY, D. D. S., M. D., Professor of Operative Dentistry and Dental Histology.**

**JAMES TRUMAN, D. D. S., LL. D., Professor of Dental Pathology, Therapeutics and Materia Medica.**

**EDWARD T. REICHERT, M. D., Professor of Physiology.**

**GEORGE A. PIERSOL, M. D., Sc. D., Professor of Anatomy.**

**JOHN MARSHALL, M. D., NAT. Sc. D., LL. D., Professor of Chemistry and Toxicology.**

**EDWARD C. KIRK, D. D. S., Sc. D., Professor of Clinical Dentistry, and DEAN OF THE FACULTY.**

**\*ALEXANDER C. ABBOTT, M. D., Sc.D., PEPPER Professor of Bacteriology.**

**MATTHEW H. CRYER, D. D. S., M. D., Professor of Oral Surgery.**

**CHARLES R. TURNER, D. D. S., M. D., Professor of Mechanical Dentistry and Metallurgy.**

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**GEORGE G. MILLIKEN, D. D. S., M. D., Assistant Professor of Operative Technics.**

**DAVID H. BERGEY, A. M., M. D., Assistant Professor of Bacteriology.**

**R. HAMILL D. SWING, D. D. S., Assistant Professor of Oral Surgery and Anesthesia.**

**A. DWITT GRITMAN, D. D. S., Assistant Professor of Mechanical Dentistry.**

**FREDERIC A. PEESO, D. D. S., Assistant Professor of Crown-and-Bridge Work.**

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\*Absent on Public Business.

## LECTURERS.

ROBERT HUEY, D. D. S., Lecturer on Operative Dentistry.  
JOHN D. THOMAS D. D. S., Lecturer on Nitrous Oxide.  
MEYER L. RHEIN, D. D. S., M. D., Lecturer on Dental Pathology.  
SAFFORD G. PERRY, D. D. S., Lecturer on Operative Dentistry.  
WILLIAM A. CAPON, D. D. S., Lecturer and Special Instructor in Porcelain Work.  
ALFRED P. LEE, D. D. S., Lecturer on Materia Medica.

## DEMONSTRATORS.

WILLIAM DIEHL, D. D. S., Demonstrator of Operative Dentistry.  
GEORGE H. CHAMBERS, M. D., Assistant Demonstrator of Normal Histology.  
FREDERICK W. AMEND, JR., D. D. S., Demonstrator of Mechanical Dentistry.  
J. EDWARD DUNWOODY, D. D. S., Demonstrator of Crown-and-Bridge Work.  
MILTON N. KEIM, JR., D. D. S., Demonstrator of Mechanical Dentistry.  
JAMES G. LANE, D. D. S., Demonstrator of Mechanical Dentistry.  
DANIEL W. FETTEROLF, M. D., Demonstrator of Chemistry.  
ROBERT J. SEYMOUR, D. D. S., Demonstrator of Mechanical Dentistry.  
JAMES A. DOWDEN, D. D. S., Demonstrator of Mechanical Dentistry.  
WILSON ZERFING, D. D. S., Demonstrator of Operative Dentistry.  
AUGUSTUS O. KOENIG, B. S., M. D., Demonstrator of Dental Metallurgy.  
G. JANVIER PAYNTER, D. D. S., Demonstrator of Tooth Modeling.  
FREDERICK W. ALLEN, D. D. S., Demonstrator of Operative Technics.  
JOHN A. McCALAIN, D. D. S., Demonstrator of Operative Dentistry.  
J. GARRETT HICKEY, D. D. S., Demonstrator of Physiology.

S. MERRILL WEEKS, D. D. S., Demonstrator of Orthodontia.  
ALBERT W. JARMAN, D. D. S., Demonstrator of Mechanical Dentistry.  
WALTER W. MCKAY, D. D. S., Demonstrator of Porcelain Inlay Work.  
JEHU T. GORE, D. D. S., Demonstrator of Operative Dentistry.  
WALTER S. CORNELL, M. D., Demonstrator of Osteology.  
CHARLES H. JACO, D. D. S., Demonstrator of Operative Dentistry.  
ALFRED P. LEE, D. D. S., Demonstrator of Operative Dentistry.  
GEORGE M. DORRANCE, M. D., Demonstrator of Applied Anatomy.  
MICHAEL T. BARRETT, D. D. S., Demonstrator of Mechanical Dentistry.  
WILLIAM H. F. ADDISON, M. B., Demonstrator of Normal Histology.  
ELON L. KANAGA, D. D. S., Demonstrator of Crown-and-Bridge Work.  
EMERSON R. SAUSSER, D. D. S., Demonstrator of Porcelain Inlay Work.  
HAROLD B. WOOD, M. D., Assistant Demonstrator of Normal Histology.  
DOUGLAS O. HENSON, D. D. S., Demonstrator of Operative Dentistry.  
EDWARD KENNEDY, D. D. S., Demonstrator of Mechanical Dentistry.  
PHILIP KURTZ, D. D. S., Demonstrator of Mechanical Dentistry.  
SIDNEY A. SANDS, D.D.S., Demonstrator of Mechanical Dentistry.

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JOHN A. REIMOLD, REGISTRAR.

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CLINICAL INSTRUCTORS.

Dr. EDWARD I. KEEFER,  
Dr. JOHN R. YORKS,

Dr. DANIEL N. MCQUILLEN,  
Dr. HENRY C. REGISTER.

## ORGANIZATION OF THE DENTAL SCHOOL.

The Department of Dentistry of the University of Pennsylvania was organized in the early part of 1878. It was the third school created as the dental department of a university, having been preceded in this respect by the Harvard School of Dentistry (organized in 1867), and the Dental Department of the University of Michigan (organized in 1875).

The motive leading to the creation of dental schools as regular departments of the university educational system was the rapid growth of dentistry as a profession. This was shown by the improvement in the educational equipment of its practitioners, and by the tendency to broaden the courses of instruction furnished by dental schools to meet the continual necessity for more thorough training.

Realizing that but two conceptions of the status of dentistry were possible, viz.: that it was either a branch of medicine, or else a separate profession; and believing that its close relationship with medicine called for the future development of dentistry in conformity therewith, the Trustees took action resulting in the creation of the Department of Dentistry of the University of Pennsylvania. The plan of instruction was so arranged that the branches common to both medicine and dentistry were taught concurrently by teachers who held corresponding chairs in both medical and dental faculties; while the strictly dental teaching was provided for by the creation of chairs whose incumbents were specially qualified for giving instruction in their respective branches. This arrangement is in strict accordance with the university idea, by which the teaching of allied branches is centralized in different departments. It does not imply that the Department of Dentistry is a branch of the Department of Medicine, for, as a matter of fact, both are distinct Departments of the University.

It is worthy of note that the Department of Dentistry is actually, as well as in name, a Department of the University. Its position as a recognized member of the University family confers upon its students certain advantages pertaining to that relationship. Its students enjoy in common with all other students of the University the privileges and social relationships pertaining to the student life of the whole body. Prominent among these features is membership in the Houston Club, an organization governed by students and domiciled in a club house which in its fittings and appointments is second to no other club house in Philadelphia. Its students have

also the use of the Dormitories, and are admitted to all of the athletic features of the University; while, with reasonable restrictions, the opportunity is afforded them to pursue such allied lines of study as in the judgment of the authorities may tend to add strength and fullness to the dental educational equipment.

The practical advantages that accrue to the dental student by such a broad policy are at once manifest. Its effects upon the status of the dental practitioner must be recognized when it is considered that during the student life, his association with the students of the other Departments of the University is upon a basis of equality in all that concerns the student life of the institution. The influence of this feature in bringing about a close relationship between dental and medical students develops a mutual respect and recognition, which in their career as practitioners is of the utmost importance.

#### EQUIPMENT.

The arrangement of the interior of the Dental Hall is such that facilities are provided for the thorough education of the student in every important detail of his professional work. The clinical operating-room occupies one entire floor of the main building, giving a floor space 180 by 50 feet, furnished with one hundred latest pattern Wilkerson operating chairs, each provided with a fountain cuspidor, with running water attached, and attachment for the Fisk saliva ejector. Each chair is provided with a bracket arm, and table for holding instruments, besides a separate table for the instrument case. Electric service is provided for each chair. A complete locker system in connection with the operative clinic furnishes means for the storage of instruments when not in use. In the fitting up of the operating-room, the aim has been to make the appointments as nearly as possible like those of a first-class private office, so that from the beginning of his course the student is familiarized with the conditions he will meet in actual practice.

One large general laboratory for prosthetic work is provided, and separate departments for crown-and-bridge work, orthodontia technics, prosthetic technics, operative technics, porcelain work including inlays, crown-and-bridge and continuous gum work, metallurgical work, cast metal fillings, vulcanizing and modeling; also special clinic-rooms and laboratories. Ample arrangements are provided for the convenience and comfort of the students in the care of instruments, tools, etc. There are also hat and coat rooms, lavatories, etc., a

bicycle-room, laundry, store-rooms, and living apartments of the janitor; and an assembly-room for the exclusive use and recreation of the students when not on duty. The laboratories are fitted with the most approved appliances for work and instruction in the several departments of dentistry. Compressed air is supplied to the laboratory tables for melting and soldering operations, as well as for metallurgical work. The laboratory lathes are driven by electric motor, and no feature which could add to the facilities for thorough and accurate work has been omitted.

The lecture amphitheatre will comfortably seat 550. It joins the main building by a corridor, and in relation with it are arranged the dental museum and library.

As the laboratory, or manual-training, method forms a prominent and necessary adjunct to didactic teaching, facilities for carrying out the technic system of instruction are provided in connection with each subject to which the system is applicable.

#### ADMISSION.

The courses in Dentistry are not open to women.

Special attention is called to the rule requiring all applicants for matriculation to be present and enter their names *not later than October 10th following the official date of opening*.

Candidates for admission will not be permitted to matriculate for any session other than that immediately succeeding the date of matriculation. No candidate will be allowed to matriculate for more than one session at a time.

#### PRELIMINARY EDUCATIONAL REQUIREMENTS.

For the Session 1909-10 the minimum educational standard for unconditioned matriculation is 60 counts based upon the subjects specified on the next page of this catalogue or upon the equivalent of these counts in High School subjects attested by certificates or diplomas issued by approved High Schools or literary colleges. Applicants may be admitted upon a minimum of 45 counts upon the condition that 15 additional counts shall be made up before entrance upon the second year of the course.

An applicant whose credentials do not fully meet the requirements outlined above, or who does not pass the entrance examinations with a percentage of 70 in every subject, may be admitted on condition that he make up the required work in any branch or branches (not exceeding 15 counts) as specified on the next page.

## ENTRANCE SUBJECTS.

Counts.	Counts.
4 First Year English	2 Trigonometry
3 Grammar, Rhetoric, and English Reading	5 Physics
5 First Year Latin	5 Chemistry
5 Latin Grammar, and Cæsar (four books)	5 American History and Civics
5 First year German, French or Spanish	2 History of Greece and Rome
2 Advanced Arithmetic (in- cluding Metric System and Mensuration)	3 European History
5 Algebra through Quadratics	3 English History
2 Intermediate Algebra	2 Elementary Botany
5 Plane Geometry	2 Elementary Zoölogy
2 Solid Geometry	3 Advanced Drawing
	2 Shop work (in Manual Training School); sec- ond year (2)

The count values above specified are based upon work throughout a standard academic year consisting of thirty-eight weeks. Additional work will receive additional count credit.

In lieu of a diploma or certificate, covering the above specified requirement, the applicant will be required to pass a matriculate examination, which shall be the equivalent of that forming the basis of the entrance standard of preliminary education.

To assist the candidate in preparing for the entrance examination, the following studies are recommended, each representing one year's high school work:

## LANGUAGE (9 counts).

## English (4 counts).

(a) *Grammar*.—Parts of speech and their properties; declension; comparison; conjugation; general rules of syntax; analysis; parsing; meaning of words; paraphrasing; elements of rhetoric.

(b) *Composition*.—Special attention must be paid to spelling, punctuation, capitalization, matter and structure; paraphrasing; unity and coherence.

*Text Books*.—Reed & Kellogg, *Higher Lessons in English*; Woodley, *Foundation Lessons in English Grammar*.

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**NOTE.**—The entrance examination for the session of 1909-1910 will be held in Roberts Vaux School-building, Wood Street below Twelfth, on Saturday, September 18, 1909, at 9 A. M.

(c) *English Reading*.—College entrance requirements, viz.: A general knowledge of the following works:

Shakespeare, *The Merchant of Venice* and *Julius Caesar*; *The Sir Roger de Coverley Papers* in *The Spectator*; Goldsmith, *The Vicar of Wakefield*; Scott, *Ivanhoe*; Coleridge, *The Rime of the Ancient Mariner*; Carlyle, *Essay on Burns*; Tennyson, *The Princess*; Lowell, *The Vision of Sir Launfal*; George Eliot, *Silas Marner*.

A special knowledge of the subject-matter, form and structure of the following works: Shakespeare, *Macbeth*; Milton, *Lycidas*, *Comus*, *L'Allegro* and *Il Penseroso*; Burke, *Speech on Conciliation with America*; Macaulay, *Essays on Milton and Addison*.

*Latin* (5 counts). First year high school course.

(a) *Grammar*.—Accentuation; rules for gender; declension of regular nouns, pronouns and adjectives; comparison of adjectives and adverbs; conjugation of regular verbs; general rules of syntax.

(b) Vocabulary exercises and translations of easy sentences and selections into English and into Latin.

*Text Books*.—Bennett, *Foundations of Latin*; Collar & Daniell, *First Year Latin*.

*Note*.—In lieu of Latin, the applicant may elect an equivalent in one year's course in German, French or Spanish.

*Text Books*.—Collar, *First Year German*; François, *Beginners' French*; DeTorne, *Combined Spanish Method*.

#### MATHEMATICS (12 counts).

*Arithmetic* (2 counts). The fundamental operations; fractions; decimals; compound numbers; interest; ratio and proportion; square and cube root; metric system; elementary mensuration; series.

*Text Books*.—Brooks, *Normal Standard Arithmetic*; Gideon, *Model Complete Arithmetic*.

*Algebra* (5 counts). The fundamental operations; factoring; fractions; equations of one or two unknowns; ratio and proportion; the simpler forms of radicals and of quadratics; binomial theorem.

*Text Books*.—Wentworth, *Short Course in Algebra*; Brooks, *Elements of Algebra*.

*Plane Geometry* (5 counts). Usual definitions, theorems, constructions and demonstrations; general principles of plane rectilinear figures; measurement of angles; similar polygons; areas; regular polygons; the circle; simple original problems.

*Text Books*:—Phillips & Fisher, *Plane Geometry*; Brooks, *Plane Geometry*.

#### HISTORY (9 counts).

(a) *History and Constitution of the United States* (4 counts). The most important discoveries and settlements; the struggles of European nations for mastery in America; the Revolution; the leading events under the successive administrations; the War of 1812; the Mexican War; the Civil War—the causes, most important campaigns, result; the general development of our nation in extent, population, industries and power.

The causes leading to the adoption of the Constitution; the most important features; the general principles of our government; the legislative department, the executive, the judicial, with their general duties and powers.

*Text Books*:—McMaster, *School History of the United States*; Eggleston, *School History of the United States and its People*.

(b) *History of Greece and Rome* (2 counts). The most important political events; the prominent features of civilization; the most striking manners and customs of the people.

*Text Books*:—Barnes, *General History*; Myer, *General History*.

(c) *History of England* (3 counts). Britain; Saxon England; Norman England; England under Plantagenets and Tudors; Puritan revolution; constitutional monarchy; British Empire.

The most important political events; development in civil and religious liberty and in civilization and literature; increase in extent of territory and in world influence.

*Text Books*:—Montgomery, *Leading Facts of English History*; Tappan, *England's Story*.

#### SCIENCE (5 counts).

*Elementary Physics* (5 counts). Matter and its general properties; mechanical powers; pneumatics, hydrostatics; heat, sound, light; magnetism and electricity; simple experiments.

*Text Books:*—Gage, *Elements of Physics*; Carhart & Chute, *High School Physics*.

*Note:*—In lieu of Physics, the applicant may elect an equivalent in one year's course in Chemistry.

*Text Books:*—Shepard, *Elements of Chemistry*; Remsen, *Elementary Course in Chemistry*.

*Second Year English* (3 counts).

(a) *Grammar* (continued).—Composition and rhetoric.

*Text Books:*—Hill, *Elements of Rhetoric and Composition*; Thorndike, *Elements of Rhetoric and Composition*.

(b) *Literature*. *DeCoverley papers*, *Pilgrim's Progress*, *Franklin's Autobiography*, *As You Like It*, *Twelfth Night*, *Merchant of Venice*, *Silas Marner*, *Vicar of Wakefield*, *House of Seven Gables*, *Deserted Village*, *Rape of the Lock*, *Palgrave's Golden Treasury* (Books II and III).

*Second Year Latin* (5 counts).

*Grammar*. Easy composition, Cæsar (4 books).

*Text Books:*—Bennett, *Latin Grammar*; Mitchell, *Essentials of Latin*; Cæsar, *Commentaries*, any standard edition.

*Note:*—In lieu of Latin the applicant may elect an equivalent course in German, French or Spanish.

*Intermediate Algebra* (2 counts). Imaginary quantities, evolution, quadratics, progressions.

*Text Books:*—Wells, *Essentials of Algebra*; Milne, *High School Algebra*.

*Solid Geometry* (2 counts). Usual theorems, constructions and demonstrations; properties and measurement of prisms, pyramids, cylinders and cones; surfaces and volumes of solids; the sphere and the spherical triangle; simple original problems.

*Text Books:*—Brooks, *Solid Geometry*; Wells, *Solid Geometry*.

*Plane Trigonometry* (2 counts). Definitions and relations of the six trigonometric functions as ratios; circular measurements of

angles; proof of principal formulæ; simpler uses and theories of logarithms; applications.

*Text Books:*—Brooks, *Plane Trigonometry*; Wells, *Plane Trigonometry*.

*European History* (3 counts). Carlovingian empire, feudalism (10th century); the Papacy and German-Roman empire (to 13th century); formation of France to 1328; the East and the crusades (1096-1270); Christian and feudal civilization; the Renaissance (14th and 15th centuries); Protestant revolution and wars of religion (1527-1648); France and age of Louis XIV; Russia and age of Frederick the Great; French Revolution; age of Napoleon (1795-1815); growth of nationality, democracy and liberty in the 19th century.

*Text Books:*—Myer, *General History*; Fisher, *General History*.

*Elementary Botany* (3 counts). Seeds and seedlings; roots, stems, buds, flowers, fruits; mosses and ferns; algae and yeast; general function and structure of parts; life history; experiments.

*Text Books:*—Andrews, *Botany all the Year 'Round* (without flora); Bergen, *Elementary Botany*.

*Note:*—An equivalent course in elementary zoölogy will be accepted in lieu of botany.

*Advanced Drawing* (3 counts). Freehand and Mechanical.

*Manual Training School Shopwork* (2 counts).

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Other text books than those named may be used, provided they cover the subjects to the extent indicated.

Other subjects than those named in the lists preceding will have full credit-counts given to them, provided they represent a year's work in the course of a high school or equivalent school or institution.

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Registration cards and permits for the entrance examination must be first obtained from the office of the Dean of the Department of Dentistry in Dental Hall, Thirty-third and Locust streets, Philadelphia.

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Regents' Academic Counts are required from students entering from New York State.

**ADMISSION TO ADVANCED STANDING.\***

Students possessing the requisite preliminary education and who have attended one full term in a dental school recognized by this University, will be admitted to the second year, subject to the rules governing admission to advanced standing.

Graduates of a recognized medical school will be admitted to the Second-year Dental Class without examination.

Applicants for advanced standing, who have not had instruction in Practical Histology and Practical Chemistry equivalent to that required by this department, will be permitted to make up such deficiency by taking special courses, for which an extra fee of fifteen dollars is charged for each branch. Classes for special courses in these branches are organized during the second week in September for the benefit of those desiring to take the laboratory work before the work of the regular session.

Students who have credit for the completed work of two or more terms in a recognized dental school, and who possess the requisite preliminary educational qualifications, are eligible for admission to the third year, subject to the rules governing admission to advanced standing.

Graduates of foreign dental schools are required to conform to the rules governing preliminary educational qualifications as well as the rules governing advanced standing, and their credentials must have been satisfactorily authenticated before they can be accepted.

**SCHOLARSHIPS.**

1. **UNIVERSITY SCHOLARSHIPS.**—The Trustees have established two University Scholarships in Dentistry, the award of which is based upon the result of a competitive examination equivalent to that demanded for admission to the technical courses in the College. They are not awarded for less than the entire course.

Examinations for these scholarships are held on the same day with those fixed for entrance to the College (Thursday, September 16, 1909), and are open to all applicants otherwise eligible for admission to the Department of Dentistry. Circulars setting forth in detail the plan of the scholarship examination may be had upon application to the Dean of the Department of Dentistry.

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\* All applicants for advanced standing must pass the examinations of the years they desire to omit, or furnish proof that they have passed *equivalent* examinations in some recognized dental or medical school.

A registration fee of five dollars is required of all candidates for scholarship and entrance examination, and is not returnable in case of failure to pass.

2. PUBLIC SCHOOL PRIZE SCHOLARSHIPS.—Under an agreement with the city of Philadelphia, fifty free scholarships exist in the University for the benefit of graduates of the public schools. The candidates for these scholarships are examined by the Board of Public Education, and award is made to those who reach the highest grade, as vacancies occur from year to year.

#### STATUS OF STUDENTS.

A regular student is one who is regularly admitted to the Department, and who is a candidate for the degree of D. D. S.

A special student is one who is regularly admitted to the Department, but who, not being a candidate for the degree, does not take the regular course. The admission of special students is at the discretion of the Dean.

#### SPECIAL COURSES.

The Department offers special courses of instruction in any or all of the branches of the curriculum. Such courses are elective and do not lead to the dental degree. The fees for the special courses are \$50.00, \$100.00 or \$150.00, depending upon whether the student remains under instruction for three months, six months or the entire session respectively. These course fees are in all cases additional to the regular matriculation fee of \$5.00.

#### HOUSTON CLUB AND GYMNASIUM.

A uniform charge of \$10.00 a year is made upon all students, to include membership in Houston Club with all of the usual club privileges, and the use of the gymnasium and its facilities, including locker and the use of Franklin Field, excepting only at such times as the Field may be in use by athletic teams.

#### PHYSICAL EDUCATION.

In the Department of Dentistry two hours a week of graded physical culture is an obligatory part of the curriculum for all students of the first year, excepting those who have previously had an equivalent course of physical training elsewhere and those who for reasons of physical disability may be excused by the Director.

**ARRANGEMENT OF SESSION.**

The academic year consists of one session beginning on the last Friday in September, and ending at Commencement, on the third Wednesday in June. The course of instruction is graded.

Laboratory instruction, not only in all of the practical dental branches, but also in Practical Chemistry, Metallurgy, Histology, Bacteriology, Physiology and Osteology, forms a prominent feature of the course.

The session of 1909-10 will begin on Friday, September 24, 1909, and will end on Wednesday, June 15, 1910.

**MID-TERM EXAMINATIONS.**

The arrangement of subjects constituting the curriculum of the first, second, and third years as specified here and on pp. 494 *et seq.*, is provisional only, and subject to change before the opening of the following session.

In the first-year course final examinations are held about February 1 in Chemistry, Histology and Elementary Anatomy.

In the second-year course, at the same date, final examinations are held in Elementary Physiology, one half of Applied Anatomy and Bacteriology.

In the third-year course final examinations are held at mid-term in Metallurgy, Crown-and-Bridge Work, Dental Ceramics, Anesthesia, Orthodontia, and one half of Oral Surgery.

**RULES GOVERNING MID-TERM EXAMINATIONS.****1. NON-PRESENTATION AND FAILURES.**

A student who has not undergone examination, or who has failed to attain a mark of 50 in any examination, may be re-examined:

(a) At the first re-examination about March 1; or, failing then

(b) At the second re-examination about one week prior to the final examinations of the academic year in May.

**2. FAILURE TO MAKE A GENERAL AVERAGE OF 60.**

A student having passed all the examinations, but failing to attain a general average of 60, may avail himself of the privileges of the re-examinations at the times designated in paragraph 1, in all of the subjects in which a mark of less than 60 was attained.

**3. ELIGIBILITY FOR FINAL EXAMINATIONS IN MAY.**

All the mid-year examinations must be passed before the candidate becomes eligible for the final examinations for the academic year, held in May.

**4. REPETITION OF THE STUDIES OF THE YEAR.**

The general rules governing the repetition of the studies of any year shall apply to those students who failed to pass or to attain the required general average, or who were ineligible to appear at the final examinations of the academic year, held in May.

**RULES GOVERNING TERM EXAMINATIONS.****FIRST AND SECOND YEAR STUDENTS.**

1. The examination marks of this Department are based on a scale of 100. Each student must obtain a general average of 60 to pass the examinations of the year. 50 on a single branch will entitle him to average; less than 50 constitutes a failure in that branch.

2. Students who have failed to pass in any or all the branches are given an opportunity for a second examination, before the opening of the next regular session, on the stated day in September designated for re-examinations in the official calendar in this Catalogue; but if the student fail to appear, or if his general average be less than 60, he shall repeat the studies of the year except those in which he received a grade of not less than 70.

3. A student may be permitted to matriculate in the succeeding year, if he has successfully passed all but one branch, on condition that the one in which he has been found deficient must be passed on or about November 1 of the year in which he has been matriculate 1. Failing at the November examination to pass the branch in which he is conditioned, the student will be required to repeat the work of the year as provided in Rule 2. This rule applies to laboratory and clinical requirements as well as to didactic work.

4. No student will be eligible for examination if any portion of his fees remains unpaid.

**EXAMINATION FOR GRADUATION.**

1. The examination marks shall be upon a scale of 100.

2. Each candidate must attain at least 50 in any single branch, and have a general average of 60, before he can be recommended for graduation.

3. Candidates who attain a general average of at least 90 shall be considered to have gained Honors of the first class, and will receive Honorable Mention.

4. The graduation average shall be based on the examination marks of the whole curriculum.

5. Examinations are held immediately after the completion of the lecture courses.

*No student can be examined before that time except by consent of the Faculty.*

### GRADUATION.

At the close of the course, a student who has fulfilled all requirements satisfactorily receives the degree of *Doctor of Dental Surgery* (D. D. S.), under the following regulations:

I. He must be of legal age and of good moral character.

II. He must have passed a satisfactory examination in all the branches of the curriculum; must have attended the practical instruction and performed the required practical work in all departments; and his last year of instruction must have been at the Department of Dentistry of this University.

III. He must have dissected at least two parts; must have performed thoroughly, and to the satisfaction of the Professor of Operative Dentistry, all the usual dental operations; must have undertaken at least one artificial case comprising a full upper and lower denture, and brought it completed, with the patient, to the Assistant Professor of Mechanical Dentistry, before the fifteenth day of May; and must have prepared for presentation to the Professor of Mechanical Dentistry, before the fifteenth of May, a specimen case to be deposited in the University collection. The required operations, as well as the work on the artificial case, must have been performed in Dental Hall.

IV. After receiving notice of having successfully passed the final examination, he must enter his name on the Register of Candidates for the Degree.

V. He must be present at Commencement, unless excused by the Dean of the Faculty.

### TEXT-BOOKS AND WORKS OF REFERENCE.\*

#### Text-Books.

#### Works of Reference.

##### *Operative Dentistry:*

Kirk, the American Text- Book of Operative Dentis- try. (Third edition.)	Johnson, Principles and Practice of Filling Teeth. Kingsley, Oral Deformities.
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\* In all cases the latest editions should be obtained.

## Text-Books.

## Works of Reference.

*Mechanical Dentistry and Metallurgy:*

Turner, The American Text-Book of Prosthetic Dentistry.

Essig-Koenig, Dental Metallurgy.

*Dental Pathology and Therapeutics:*

Burchard-Inglis, Dental Pathology, Therapeutics and Pharmacology. (Second edition.)

*Materia Medica:*

Long, Dental Materia Medica. H. C. Wood, Therapeutics.  
Wood & Bache, United States Dispensatory.  
Butler, Text-Book of Materia Medica, Therapeutics and Pharmacology.

*Orthodontia:*

Angle, Treatment of Malocclusion of the Teeth and Fractures of the Maxilla.

*Chemistry:*

Richter, Inorganic Chemistry. Mitchell, Dental Chemistry.  
Medicus, Qualitative Analysis. Alex. Smith, General Inorganic Chemistry. (Seventh edition.)

*Histology:*

Piersol, Normal Histology.

*Anatomy:*

Piersol, Human Anatomy. Cunningham, Human Anatomy.  
Black, Dental Anatomy. Tomes, Dental Anatomy.

*Dissection Manual:*

Cunningham, Practical Anatomy.

## Text-Books.

## Works of Reference.

*Applied Anatomy:*

Cryer, Studies of the Internal Anatomy of the Face.

*Physiology:*

Stewart, Manual of Physiology.

Howells, Physiology.

*Oral Surgery:*

Bergmann, A System of Practical Surgery. Vol. I.

Marshall, Injuries and Surgical Diseases of the Face, Mouth and Jaws.

*Bacteriology:*

Abbott, Principles of Bacteriology.

Miller, Micro-Organisms of the Human Mouth.

*Dictionary:*

Gould, Student's Medical Dictionary, or

Dorland.

## ROSTER.\*

## FIRST-YEAR CLASS.—SESSION 1908-1909.

## Order of Instruction before February 1.

<i>Hour.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
9 A. M.	Cornell. Osteology and Syndesmology.	Cornell. Osteology and Syndesmology.	Turner. Prosthetic Dentistry.	Class divided into Sections for Instruction in Prosthetic and Operative Technics.	Class divided into Sections for Instruction in Prosthetic and Operative Technics.	Dental Anatomy and Modeling tooth forms.
10 A. M.	Marshall. Chemistry.	Marshall. Chemistry.	Class divided into Sections for Instruction in Prosthetic and Operative Technics.	Class divided into Sections for Instruction in Prosthetic and Operative Technics.	3 P. M. Physical Education.	
11 A. M.	Physical Education.	Prosthetic and Operative Technics.	Class divided into Sections for Pract. Work in Chemistry and Histology.	Class divided into Sections for Pract. Work in Chemistry and Histology.	Piersol. Anatomy.	
1.30 to 4 P. M.	Class divided into Sections for Pract. Work in Chemistry and Histology.	Class divided into Sections for Pract. Work in Chemistry and Histology.	Class divided into Sections for Pract. Work in Chemistry and Histology.	Class divided into Sections for Pract. Work in Chemistry and Histology.	Dorrance. Anatomy Recitations.	
4 P. M.	Piersol. Anatomy.	Piersol. Anatomy.	Marshall. Chemistry.	Piersol. Anatomy.	Piersol. Anatomy.	
5 P. M.		Dorrance. Anatomy Recitations.				

\* Rosters are subject to rearrangement at the beginning of each academic year.

## SECOND-YEAR CLASS.—SESSION 1908-1909.

## Order of Instruction before February 1.

<i>Hour.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
9 A. M.	Gritman. Prosthetic Technics.	Section Work in Prosthetic Dentistry, or Crown and Bridge Work, or Operative Clinic.	Bersey. Bacteriology.	Section Work in Prosthetic Dentistry, or Crown and Bridge Work, or Operative Clinic.	Section Work in Prosthetic Dentistry, or Crown and Bridge Work, or Operative Clinic.	Operative Clinic.
10 A. M.	Section Work in Prosthetic Dentistry, or Crown and Bridge Work, or Operative Clinic.					
11 A. M.		Kirk. Clinical Dentistry.	Cryer. Oral Surgery.	Physiology Conference.	Physiology Conference.	
12 M.		Section Work. Dissecting, Bacteriology, or Physiology Demonstrat n.	Cryer. Oral Surgery.			
1.30 to 4 P. M.	Reichert. Physiology.	Reichert. Physiology.	Truman. Materia Medica.	Reichert. Physiology.	Reichert. Physiology.	
4 P. M.	Turner. Prosthetic Dentistry.	Darby. Operative Dentistry.	Turner. Prosthetic Dentistry.	Darby. Operative Dentistry.	Truman. Dental Pathology and Therapeutics.	
5 P. M.						

## THIRD-YEAR CLASS.—SESSION 1908-1909.

## Order of Instruction before February 1.

<i>Hour.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
9 A. M.		Capon. Dental Ceramics.		Gritman. Prosthetic Technics.	Turner. Orthodontia.	
10 A. M.	Operative or Prosthetic Clinical Pract.	Operative or Prosthetic Clinical Pract.	Operative or Prosthetic Clinical Pract.	Operative or Prosthetic Clinical Pract.	Operative or Prosthetic Clinical Pract.	Operative Clinic.
11 A. M.	Crown and Bridge Work.	Ceramics.		Ceramics.	Crown and Bridge Work.	
12 M.		Crown and Bridge Work.	Kirk. Clinical Dentistry.	Cryer. Oral Surgery.	Swing. Anaesthesia.	Cryer. Oral Surgery.
1.30 to 5 P. M.	Operative Clinic, Orthodontia, Inlay Work, Practical Metallurgy.	Operative Clinic, Orthodontia, Inlay Work, Practical Metallurgy.	Operative Clinic, Orthodontia, Inlay Work, Practical Metallurgy.	Operative Clinic, Orthodontia, Inlay Work, Practical Metallurgy.	Operative Clinic, Orthodontia, Inlay Work.	
5 P. M.	Turner. Prosthetic Dentistry.	Darby. Operative Dentistry.	Turner. Prosthetic Dentistry.	Darby. Operative Dentistry.	Truman. Dental Pathology and Therapeutics.	

Medical and Surgical Clinics at the University Hospital are held from 12 M. to 2 P. M., on Wednesdays and Saturdays, and are open to the Second and Third-year Classes. These are in addition to the dental clinics at the Philadelphia Hospital, on Saturdays at 12 o'clock, and to the Oral Surgical Clinics as noted on the roster.

#### OPERATING-ROOM, LABORATORIES, ETC.

The operative clinic room and laboratories are spacious and well equipped, affording ample facilities for the practical training of the student.

The dissecting-room is large, well lighted, thoroughly ventilated, and furnished with ample material for the successful prosecution of anatomical studies.

#### GRADATION OF THE COURSE.

In order to facilitate work in the practical branches, and to economize the student's time, the regular session is so arranged that students during the first year are required to devote the time equally to dental, histological and chemical laboratory work.

During the second and third years, the student has practically the entire forenoon of each day for dental work. Thus ample opportunity is afforded for practice in Operative and Mechanical Dentistry. In the latter branches, the students are divided into sections, devoting the time not otherwise engaged to practice in the operating-rooms.

This plan of gradation enables the First-year student to present himself for examination in the following branches: Chemistry, Histology and Anatomy, including Osteology and Myology, and on Progress in Mechanical Dentistry, Operative Technics and Materia Medica. The Second-year student will be examined on Materia Medica, Bacteriology, Applied Anatomy and Physiology, and on Progress in Operative and Mechanical Dentistry. Such an arrangement is economical not only in point of time, but also in facilitating a student's acquirement of knowledge in the remaining branches.

#### OUTLINE OF THE COURSE.\*

##### FIRST YEAR.

Students of the First-year Class will be required to attend instruction in and pass examinations upon the following branches:

1. Chemistry. Three lectures a week. Five hours laboratory.
2. Anatomy. Four lectures a week. One-half the required work in dissecting is done during this year.

\* See first paragraph under Mid-Term Examinations, p. 490.

3. Histology. Five hours laboratory a week.
4. Osteology. Two lectures a week.
5. Materia Medica. One lecture a week.
6. Students of the First-year Class will be trained in Operative and Mechanical Technics during hours not otherwise occupied.
7. They will, in addition to the subjects named, attend lectures on Operative and Mechanical Dentistry. Each one hour a week.
8. Physical Education. Two hours a week.

#### SECOND YEAR.

1. Students of the Second-year Class will attend lectures on Materia Medica, Physiology, Operative and Mechanical Dentistry and Metallurgy, Dental Pathology and Therapeutics, Clinical Dentistry, Bacteriology, Applied Anatomy and Oral Surgery. Work in Practical Anatomy (dissecting) is finished during this year.
2. They will pursue Operative and Mechanical Work, with the privilege of the operating-room and appliances during the morning and afternoon clinics.
3. The final examinations of the second year will be upon Materia Medica, Physiology, Bacteriology, Applied Anatomy and Progress in Operative and Mechanical Dentistry

#### THIRD YEAR.

1. Students of the Third-year Class will continue the practical work in Operative Dentistry, Mechanical Dentistry and Dental Metallurgy, and the lectures on these subjects, together with Dental Pathology and Therapeutics, Clinical Dentistry, Oral Surgery and Orthodontia.
2. Examinations at mid-term of the third year will be held upon one-half of the subject of oral surgery and upon the following minor subjects: Dental Metallurgy, Ceramics, Crown-and-Bridge Work, Orthodontia and Anesthesia.
3. At the close of the term, examinations will be held upon Operative Dentistry, Prosthetic Dentistry, Dental Pathology and Therapeutics, Clinical Dentistry and Oral Surgery.

#### COURSE OF INSTRUCTION.

The lectures on OPERATIVE DENTISTRY AND DENTAL HISTOLOGY embrace the comparative anatomy of the teeth; the functions and microscopical peculiarities of the dental organs; the development of teeth and their component tissues; a full description of the elucidation of all dental operations, such as filling, extracting and regulating; the pathological relations of the teeth to the other parts

of the system; and a minute description of all diseases related to dental surgery or of interest to the dentist. The methods taught are demonstrated in clinics.

The course of instruction in **MECHANICAL DENTISTRY** is a graded one, and is arranged to embody in the teaching of the first year the fundamental principles of prosthetic work, including the properties of the materials used for prosthetic purposes and the various mechanical processes involved in their utilization; in the second year a more specific and extended instruction in these procedures is given, and the finger-skill necessary in the usual mechanical operations is developed; while in the third year the student is instructed in the choice of means for attaining a given end, and the selection of this means in accordance with the requirements of specific cases. During the third year attention is given to the more highly specialized branches of Prosthetic Dentistry under qualified demonstrators.

Instruction in Mechanical Dentistry is accomplished by didactic lectures illustrated by means of heroic models, lantern slides, and blackboard drawing; by graded technic courses, which include in each year illustration of the lecture topics by actual demonstration of the processes before the class, and the manufacture of the appliances so illustrated by the class, divided into small sections for systematic work; by specimens on exhibition in the general laboratory illustrative of successive stages in the technic requirements; and by abundant clinical practice.

The lecture course will include, in addition to dental prosthesis the replacement of tissues about the mouth not strictly dental, and the manufacture of appliances for the remedy of palatal defects.

The instruction in **ORTHODONTIA** will be by means of lectures, quizzes, a technic course and clinical practice; and attention will be specially paid to the treatment of cases in the light of their etiology.

The lectures on **CHEMISTRY** embrace the study of chemical physics and principles of chemical philosophy, together with a detailed consideration of the principal elementary substances and their compounds; and of the fundamental principles of Organic Chemistry, including the classification of organic compounds, and the special study of typical members of the different classes. Special attention is also given to the laws of chemical affinity, and the conditions under which they are modified, especially as they relate to the preparation of mixtures and prescriptions.

The course in **PRACTICAL CHEMISTRY** in the laboratory includes exercises in chemical manipulation; the study of the chemical prop-

erties of the principal metals; the reactions of acids and their combinations; and the general principles of qualitative analysis, especially as they relate to the detection and separation of the metals and compounds of interest to practitioners of Dentistry. Each student is provided with a separate table and apparatus, and is required to perform all the usual chemical manipulations under the directions of demonstrators, as well as to exhibit by written formulæ all reactions involved in his tests.

**HUMAN ANATOMY** is taught in its relations to all the branches of medical science, including Dentistry. The lectures are illustrated by fresh dissections of the human body, and by a rich museum of anatomical specimens, well-executed models and drawings.

In addition to the lectures and demonstrations by the Professor of Anatomy, a course of demonstrations in Applied Anatomy is given to the students of the second year. The course consists of a drill by recitations and demonstrations of dissections upon those anatomical regions with which the dental and oral surgeon is especially concerned. Practical instruction in general and special **HISTOLOGY** will be given in the histological laboratory to the students of the first year, the class being divided into sections. The laboratory is furnished with excellent microscopes, and all apparatus necessary to enable the student to become familiar with the most approved methods of microscopical technology and with the minute structure of all the tissues and organs. Special facilities are afforded for original research; for this purpose the laboratory is open throughout the year, except during July and August.

The **OSTEO-SYNDESMOLOGICAL LABORATORY** is under the supervision of the Professor of Anatomy and Demonstrator of Osteology. In this laboratory, the first-year student is required to make himself familiar with the skeleton and the articulations as a part of his instruction in practical anatomy.

The course in **PHYSIOLOGY** includes thorough instruction on the subject of animal physiology, with special reference to the physiology of Man.

The lectures on **DENTAL PATHOLOGY** include such portions of general pathology as have a bearing upon the special subjects taught.

Dentition and its possible pathological results receive careful attention, followed by a detailed consideration of all the diseases to which the teeth and surrounding parts are liable; the normal and abnormal character of the oral secretions, and the direct and remote relations that the pathological conditions of the mouth sustain to other portions of the system.

The treatment required under each head is explained, and the recognized processes necessary to secure a return to normal conditions are minutely detailed.

**MATERIA MEDICA** is taught with special reference to the character and value of those remedies which have any bearing upon dental therapeutics.

**BACTERIOLOGY.**—The study of **BACTERIOLOGY** is an obligatory part of the second year curriculum. The growing importance of this subject in relation to dental pathology and therapeutics has made necessary certain modifications in the technique of nearly all dental operations. A clear understanding of the practical bearing of bacterial life-processes has become a necessity for intelligent and successful dental practice, just as it has similarly for surgical practice.

The course is so arranged with respect to the requirements of the dental practitioner that he will afterwards be able not only to apply correctly the most approved methods for preventing and combating bacterial action, and to develop an efficient system of antiseptic technique in connection with his work; but he will also be trained in the several methods that will enable him to study the bacterial factor which is the exciter of pathological conditions in special cases arising in his practice.

The instruction in **BACTERIOLOGY**, which is under the direction of Dr. A. C. ABBOTT, Professor of Bacteriology and Director of the Laboratory of Hygiene, is principally practical and embraces full laboratory instruction, covering the following subjects:

1. Apparatus employed—sterilizers, incubators, pressure regulators, thermostats, etc.
2. Culture media, methods of preparation, sterilization methods.
3. Microscopic characteristics of cultures of bacteria in general and of special forms.
4. Methods of obtaining, from mixtures of different bacteria, individual species in pure cultures.
5. Microscopic technique. Use and care of instruments, staining from cultures, section cutting and staining and mounting of tissues.
6. Pathogenic bacteria, isolation, identification and inoculation.
7. Disinfection of instruments, appliances, etc., thermal and chemical, methods and apparatus, modes of testing efficiency.
8. Antisepsis and asepsis in dental surgery, preparation of dressings, instruments, operator and assistants and of patients.

Following this, the special study of Bacteriology in relation to dental pathological conditions will receive full consideration and elaboration. The classification, life-history, modus of infection and pathological significance of all bacterial forms having distinct dental importance will be studied in detail.

The lectures on these subjects are appropriately illustrated, and accompanied by suitable demonstrations whenever possible. The Laboratory of Hygiene has a thoroughly equipped department for practical instruction in Bacteriology, including an ample number of high-grade microscopes for the special use of dental students in the study of this branch. Examination upon the subject will be a prerequisite to the obtaining of the dental degree.

**CLINICAL DENTISTRY.**—The instruction in this department has for its object the study of the whole range of dental operations as they arise in practice, especially from the clinical point of view.

The valuable clinical material which is afforded by the large Dental Infirmary service of the University is utilized as the basis of the instruction given, both didactically and by demonstration. Cases are continually presenting for treatment in the Infirmary which furnish important points for study, and whenever these form suitable subjects for demonstration a study of the case is made for the benefit of the class. The student is thus brought into close contact with a great variety of dental and oral disorders, and is made familiar with the methods of diagnosis and the etiology and treatment of the conditions with the actual cases before him.

The teaching in this department includes, besides the foregoing, a study of the professional relations of the dentist to his patients, involving matters of deportment, habits of personal cleanliness etc.; in short, all those factors of professional conduct and bearing which, taken altogether, determine the measure of his professional success.

In the lectures on **CLINICAL DENTISTRY**, all of the latest developments in operative procedures, so far as they may have value from the clinical standpoint, are presented and critically considered.

**ORAL SURGERY** is a specialty which is a distinct outgrowth from Dentistry. As the work of the dentist came to include operations upon the surrounding tissues, as well as upon the teeth themselves, the adoption of surgical methods and more thorough training in the principles and practice of surgery became necessary. The addition of instruction in this branch to the dental curriculum includes thorough instruction in the surgical and pathological anatomy of the mouth, jaws, and associate parts; the etiology, diagnosis and

treatment of lesions of these parts; the most advanced methods of operative technique, including the use of the surgical engine, surgical anesthesia, asepsis and antisepsis, and after-treatment of the case.

The instruction is both didactic and clinical, and students are encouraged to study and personally treat cases under the supervision of the Professor of Oral Surgery and his assistants.

Special facilities for the performance of oral surgical operations and for the care of patients are provided in the University Hospital and the Philadelphia Hospital.

#### CLINICAL PRACTICE.

Seven hours daily (except on Saturdays) are spent in actual practice under the supervision of the demonstrators; on Saturdays from 9 A. M. to 12 M. Every student is required to provide his own instruments, except those for extracting. He is expected to keep them in perfect order, and will be furnished with a place in which they can be locked when not in use.

#### INFIRMARY AND LABORATORIES.

The Infirmary and Laboratories are open to the students for practice every day during the week, except on Saturday afternoons, which are reserved for clinics that may be given by members of the Faculty or instructors.

The Infirmary and Laboratories are open throughout the year, except during July and August.

#### MUSEUM AND CABINETS.

The WISTAR AND HORNER MUSEUM, founded about one hundred years ago, and annually augmented, is unequalled in the United States for the number and variety of its specimens of the normal and the morbid anatomy of the human body. It also contains a large number of preparations in Comparative Anatomy; a rich collection relating to Dentistry, such as the different stages of dentition, abnormal conditions of the teeth, mandibles of the lower animals, etc.; and an extensive collection of models. This collection is deposited in the building opposite Logan Hall, erected by the late General Isaac J. Wistar, and called the WISTAR INSTITUTE OF ANATOMY AND BIOLOGY. The Museum is open every week-day, excepting holidays, from 9 A. M. to 4 P. M., throughout the sessions. The matriculation fee in the Department of Dentistry confers admission to the Museum.

**TUITION FEES AND EXPENSES.\***

The tuition fee is \$150 per annum and is due and payable in two equal parts, on October 1 and February 1, respectively. Remittances should be in cash, or by bank draft, certified cheque, or postal money order drawn for the exact amount due, made payable to the University of Pennsylvania, and paid to W. O. Miller, Bursar, Room 102, College Hall. A percentage is added to fees not paid within thirty-one days.

A matriculation fee of \$5.00 must be paid by all new students in the department, whether previously registered in another department or not.

The matriculation fee must be paid in person and not forwarded in advance.

Under no circumstances are any changes made in the established fees.

Every student shall upon entering the University make a deposit of \$5.00 to cover loss, damage, or breakage of University property, library fines, or any charge not paid by the student in some other way. A student whose deposit is by charges against it reduced to \$2.50 or less shall be required to pay a sum sufficient to restore the deposit to its original amount. No deposit or balance remaining on a deposit shall be finally repaid to a student until he shall have been graduated or shall have formally withdrawn from the University.

Students of the Department of Dentistry may attend, without additional charge, the lectures and recitations in any other department of the University. This privilege may be obtained only by the concurrent approval, in writing, of the respective Deans.

Instruments for the first year can be procured at from \$60 to \$75. A dental engine will be needed for the second year, costing from \$40 to \$60. Additional instruments will be required for the second-year and third-year work. These instruments may be utilized in general practice.

Rooms may be had at the University Dormitories or in houses near the University, and board may be had in private boarding houses in the immediate vicinity of the University. In any case the cost of board and lodging will be from \$5.00 a week upward.

Dental Hall is provided with locker facilities for the storage of instruments, apparel, etc. It is to be understood, however, that

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\* For Estimate of Expenses, see pages 504-509.

the lockers are provided solely as an accommodation, and that in renting them to the students the Department assumes no responsibility whatever with respect to the care or loss of the contents.

*First Year.*

Matriculation Fee (paid once only) .....	\$5 00
Tuition Fee .....	150 00
Gymnasium and Houston Club Fee .....	10 00
Fee for Dissection .....	5 00
Use of Dissecting Material (one part).....	1 50
Breakage Deposit .....	5 00

*Second Year.*

Tuition Fee .....	\$150 00
Gymnasium and Houston Club Fee .....	10 00
Fee for Dissection .....	5 00
Use of Dissecting Material (one part).....	1 50

*Third Year.*

Tuition Fee .....	\$150 00
Gymnasium and Houston Club Fee .....	10 00

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Further information may be obtained from

EDWARD C. KIRK, Dean.

The Dean's office is in Room 39, Dental Hall, Thirty-third and Locust streets. Office hours: 9 A. M. to 1 P. M., daily.

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The total number of new matriculates for the present session, including those admitted to advanced standing, is 157.

Since the foundation of this department, the total number of graduates has been 2,398.

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The subjoined reports give some conception of the character and mass of work performed in the Operative and Prosthetic Departments; but the amount of costly material and careful attention necessary for the insertion of 5,850 gold fillings can be appreciated only by the experienced operator.

The number of patients (11,970) exhibits the extent of the Dental Infirmary service to a large class of persons of limited means.

## OPERATIVE DEPARTMENT.

Gold fillings .....	5,850
Tin fillings .....	7,093
Amalgam fillings .....	2,686
Cement fillings .....	1,325
Treatment of pulp and pulp canals .....	3,340
Extractions .....	2,966
Porcelain Inlays .....	501
Miscellaneous .....	649
Total .....	24,410

Seventy-three ounces (6 lbs. 1 oz.) of gold were used for filling, exclusive of that used for plate and crown work in the Laboratory.

## PROSTHETIC DEPARTMENT.

Full Dentures (Clinical, 124—Technic, 938) .....	1,062
Partial Dentures (Clinical, 119—Technic 621) .....	740
Artificial Crown Work (Clinical, 300—Technic, 1,254) .....	1,554
Repair cases .....	155
Bridge Work—Clinical .....	44
Bridge Work—Technic .....	332
Continuous Gum Bridge .....	109
Interdental Splints .....	110
Regulating Plates and Appliances .....	158
Total .....	4,254

## ESTIMATE OF EXPENSES.

## FIRST YEAR.

Matriculation Fee .....	\$5 00
General Tuition Fee .....	150 00
Gymnasium and Houston Club Fee .....	10 00
Dissecting Fee .....	5 00
Use of Dissecting Material (one part) .....	1 50
Breakage Deposit .....	5 00
Books (about) .....	30 00
Instruments (about) .....	70 00
Deposit for lockers .....	2 00
Materials for Histological and Prosthetic Work .....	6 00
Board, 35 weeks at \$5.00 .....	175 00
Washing, 35 weeks at 75 cents .....	26 25
Total, first year .....	\$485 75

## SECOND YEAR.

General Tuition Fee .....	\$150 00
Gymnasium and Houston Club Fee .....	10 00
Dissecting Fee .....	5 00
Use of Dissecting Material (one part) .....	1 50
Dental Engine, instrument (about) .....	50 00
Additional instruments (about) .....	90 00
Books (about) .....	20 00
Deposit for lockers .....	2 00
Material for Prosthetic Technic Work .....	2 00
Board, 35 weeks at \$5.00 .....	175 00
Washing, 35 weeks at 75 cents .....	26 25
 Total, second year .....	 \$531 75

## THIRD YEAR.

General Tuition Fee .....	\$150 00
Gymnasium and Houston Club Fee .....	10 00
Class expenses: rental of Cap, Gown, and Hood .....	5 00
Instruments (about) .....	30 00
Deposit for lockers .....	2 00
Material for Prosthetic Technic Work .....	2 00
Material for Ceramic Work .....	5 00
Board, 37 weeks at \$5.00 .....	185 00
Washing, 37 weeks at 75 cents .....	27 75
 Total, third year .....	 \$416 75

## **DEPARTMENT OF VETERINARY MEDICINE.**

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### **FACULTY.**

**CHARLES C. HARRISON, LL.D., PROVOST.**

**EDGAR F. SMITH, PH.D., Sc. D., LL.D., VICE-PROVOST.**

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### **PROFESSORS.**

**JOHN MARSHALL, M. D., NAT. SC. D., LL.D., Professor of Chemistry and Toxicology.**

**SIMON J. J. HARGER, V. M. D., Professor of Veterinary Anatomy.**

**LEONARD PEARSON, B. S., V. M. D., M. D., Professor of Veterinary Medicine.**

**JOHN W. ADAMS, A. B., V. M. D., Professor of Veterinary Surgery and Obstetrics.**

**ALLEN J. SMITH, A. M., M. D., Professor of Pathology.**

**CARL W. GAY, B. S. A., D. V. M., Professor of Animal Industry.**

### **ASSISTANT PROFESSORS.**

**DAVID H. BERGEY, A. M., M. D., Assistant Professor of Bacteriology.**

**JOHN W. HARSHBERGER, PH. D., Assistant Professor of Botany and Instructor in General Biology.**

**EDWARD LODHOLZ, M. D., Assistant Professor of Veterinary Physiology.**

### **LECTURERS, DEMONSTRATORS AND INSTRUCTORS.**

**ALEXANDER GLASS, V. S., Lecturer on Canine Medicine.**

**EDWIN S. MUIR, V. M. D., Lecturer and Demonstrator of Veterinary Materia Medica and Pharmacy.**

**B. FRANKLIN SENSEMAN, V. M. D., Demonstrator of Veterinary Anatomy.**

**FRANZ ENGE, Demonstrator of Forging and Horseshoeing.**

**MILTON E. CONARD, V. M. D., Lecturer on Veterinary Obstetrics and Milk Hygiene.**

CLARENCE J. MARSHALL, V. M. D., Demonstrator of Clinical Veterinary Medicine.

W. HORACE HOSKINS, D. V. S., Lecturer on Veterinary Jurisprudence, Ethics and Business Methods.

COURTLAND Y. WHITE, M. D., Lecturer and Demonstrator of Morbid Anatomy and Pathological Histology.

DANIEL W. FETTEROLF, M. D., Demonstrator of Chemistry.

J. GARRETT HICKEY, D. D. S., Assistant Demonstrator of Physiology.

WILLIAM H. F. ADDISON, A. B., M. B., Demonstrator of Histology.

THOMAS CASTOR, V. M. D., Lecturer and Demonstrator of Meat Inspection.

JOHN REICHEL, V. M. D., Instructor in Veterinary Diagnosis.

WILLIAM J. LENTZ, V. M. D., Demonstrator of Veterinary Anatomy and Surgery.

BENJAMIN M. UNDERHILL, V. M. D., Instructor in Zoölogy and Parasitology.

#### ORGANIZATION, AIMS AND EQUIPMENT.

The importance of establishing a Department of Veterinary Medicine in connection with the University was originally urged by Dr. Benjamin Rush in 1807, in an address before the Philadelphia Society for the Promotion of Agriculture, but no definite steps were taken to found such a department until the academic year of 1883-84, when a suitable site was procured, the necessary buildings erected, and a dean and faculty appointed.

The Department aims to provide a thorough education in all that pertains to Veterinary Medicine. At every step the student is drilled under personal guidance in all the practical and technical details of the profession. Too much stress cannot be laid on the importance of thus combining theory and practice. It is solely by careful and extensive training in this way that the practitioner can meet the complex problems of Veterinary Pathology—problems which, owing to the absence of communication between practitioner and patient, demand highly trained powers of observation.

An important step in the development of the Department was taken in 1903 when the Trustees of the University purchased for its use a plot of ground on Thirty-ninth street extending from Woodland avenue to DeLancey street, and comprising 55,000 square feet.

Plans are agreed upon for a thoroughly equipped building to accommodate the various divisions of the work of the Department, and a large part of the structure is now completed. The Commonwealth of Pennsylvania appropriated \$200,000 toward the erection and equipment of this building.

#### ADMISSION REQUIREMENTS.

Candidates who have received a collegiate degree, or who have passed the matriculate examination of a recognized college, or who hold a certificate covering the requirements stated below, from a recognized normal or high school, are admitted without examination.

Other candidates for admission are required: (1) to write an essay of about three hundred words, as a test of Orthography and Grammar; (2) to pass examinations in Arithmetic, United States History, Geography of the United States and its possessions, and Elementary Physics (as in the elementary treatise on Physics by Carhart and Chute or by Gage).

Graduates of approved Veterinary schools requiring three years' attendance may enter the third year without examination. Students who have attended one or more sessions in an approved Veterinary school will be allowed credit for time, but must pass an examination upon entrance.

Graduates of recognized colleges of Pharmacy are admitted to the first year without an entrance examination; and, on passing examinations in General Chemistry, Materia Medica and Pharmacy, are excused from attending lectures in those branches, and from performing the corresponding practical work in the Chemical and Pharmaceutical laboratories.

#### SCHOLARSHIPS.

I. STATE SCHOLARSHIPS.—There are twelve State scholarships, founded by the Trustees in 1889, and granted on nomination of the Governor of the Commonwealth to residents of Pennsylvania. They are open only to students entering the First-year Class, and entitle the holder to free tuition in the regular Veterinary course. Candidates are subject to the same requirements for admission as other students. These requirements must be fulfilled, and the Governor's certificate of nomination presented, on or before October 1 of each year.

II. PUBLIC SCHOOL PRIZE SCHOLARSHIPS.—Under agreement with the city of Philadelphia, fifty free scholarships exist in the University for the benefit of graduates from the public schools. The candidates for these scholarships are examined by the Board of Public Education, and award is made to those who reach the highest grade in examination, whenever vacancies occur from year to year.

#### COURSE OF STUDY.

The course of instruction extends over three years, with one session beginning on the last Friday in September, and ending on the third Wednesday in June of each year. The following are the studies:

FIRST YEAR.—*General Chemistry, Physiological Chemistry, Materia Medica and Pharmacy, General Biology, Histology, Veterinary Anatomy, Horseshoeing, Animal Industry and Botany.*

The examinations in *General Chemistry, General Biology, Animal Industry, and Horseshoeing* are held about February 1. Examinations in all of the remaining studies are held at the end of the first year.

SECOND YEAR.—*Physiology, General Pathology, Practical Bacteriology, Veterinary Anatomy, Zoölogy, Veterinary Surgery, Theory and Practice of Veterinary Medicine and Animal Industry.*

A mid-year examination in *Physiology* is held about February 1, and at the end of the year examinations are held in *Veterinary Anatomy, Physiology, General Pathology, Pathological Histology, Bacteriology, Zoölogy, and Animal Industry.*

THIRD YEAR.—*Therapeutics, Veterinary Surgery and Operative Surgery, Theory and Practice of Veterinary Medicine, Morbid Anatomy, Canine Medicine, Veterinary Sanitary Science, Jurisprudence, Obstetrics, Animal Industry, Meat Hygiene and Milk Hygiene.*

Examinations at the end of the third year: *Theory and Practice of Veterinary Medicine, Veterinary Surgery and Operative Surgery, Jurisprudence, Obstetrics, Therapeutics, Morbid Anatomy, Animal Industry, Canine Medicine, Meat Hygiene and Milk Hygiene.*

In the second year the student attends clinics, and serves as aid in the Hospital; in the third year he is placed in charge of sick animals, and is required to prepare clinical reports and make autopsies. He also makes visits to breeding and dairy farms, and to

slaughter houses, in order to familiarize himself with the races of animals, the economical means employed in their care, and the practice of dairy and meat inspection.

#### TEXT AND REFERENCE BOOKS.

**CHEMISTRY.**—Richter's Inorganic Chemistry; Alex. Smith's General Inorganic Chemistry; Medicus' Qualitative Analysis (seventh edition); Remsen's Organic Chemistry; Tyson's Practical Examination of Urine; Ogden's Clinical Examination of Urine; Long's Text-book of Physiological Chemistry; Hammersten's Text-book of Physiological Chemistry.

**MATERIA MEDICA AND THERAPEUTICS.**—H. C. Wood's Therapeutics; Winslow's Veterinary Materia Medica and Therapeutics; Muir's Materia Medica and Pharmacy; Mann's Prescription Writing.

**ANATOMY.**—Chauveau's Comparative Anatomy; Harger's translation of Goubaux and Barrier's Exterior of the Horse.

**HISTOLOGY.**—Piersol's Text-book of Histology.

**PHYSIOLOGY.**—American Text-book of Physiology; Robert Meade Smith's Physiology of the Domestic Animals; Paton's Veterinary Physiology.

**ANIMAL INDUSTRY.**—Brown's Animal Breeding; Plumb's Breeds of Livestock; Craig's Animal Judging; Jordan's Feeding Animals; Armsby's Animal Nutrition.

**HORSESHOKING.**—Adams' translation of Lungwitz on Horseshoeing; Dollar's translation of Leisering and Hartman's Foot of the Horse.

**BOTANY.**—Bessey's Botany; Gray's Lessons and Manual.

**ZOOLOGY.**—Nicholson's Manual of Zoology.

**THEORY AND PRACTICE OF VETERINARY MEDICINE.**—White and Fischer's translation of Malkmus' Clinical Diagnostics; Hayes' translation of Friedberger and Froehner's Pathology and Therapeutics of Domestic Animals; Law's Veterinary Medicine; Moore's Pathology and Diagnosis of Infectious Diseases of Animals; Glass' translation of Müller's Diseases of the Dog; Neumann's Parasites of Domesticated Animals; Fred Smith's Veterinary Hygiene.

**SURGERY.**—Udall's translation of Froehner's General Veterinary Surgery; Moeller's Operative Veterinary Surgery; French's Surgical Diseases of the Dog; Williams' Surgical Operations.

**BACTERIOLOGY.**—Abbott's Principles of Bacteriology; Bowhill's Bacteriology; Conn's Bacteriology of Milk; Russell's Dairy Bacteriology; Swithinbank and Neuman's Bacteriology of Milk.

**OBSTETRICS.**—Fleming's Veterinary Obstetrics; Dalrymple's Veterinary Obstetrics.

**PATHOLOGY.**—Kitt's Comparative General Pathology; Stengel's Text-book of Pathology; Kitt's Pathologische Anatomie der Haustiere.

**MEAT HYGIENE.**—Wilcox's translation of Ostertag's Hand-book of Meat Inspection.

**MILK HYGIENE.**—Pearson's translation of Jensen's Milk Hygiene; Fleischman's The Book of the Dairy.

**DICTIONARY.**—American Medical Dictionary.

## FIRST YEAR.—1908-1909. BEFORE FEBRUARY 1.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 to 10 A. M.	Harger. Anatomy.	Gay. Market Types.	General Biology. Laboratory. Section B.			
10 to 11 A. M.	Marshall. Chemistry.	Marshall. Chemistry.	Dissection. Section A.	Dissecting.	Dissecting.	Dissecting.
11 to 12 A. M.	Adams. Horseshoeing	General Biology. Laboratory. Section A.	Harger. Anatomy.			
12 to 1 P. M.	Gay. Market Types.	Dissection. Section B.	Marshall. General Biology.			
1.30 to 4 P. M.	Chemistry. Laboratory. Section A.	Chemistry. Laboratory. Section B.	Chemistry. Laboratory. Section A.	Chemistry. Laboratory. Section B.	Pharmacy. Laboratory.	
	Histology. Laboratory. Section B.	Histology. Laboratory. Section A.	Histology. Laboratory. Section B.	Histology. Laboratory. Section A.		
4 to 5 P. M.	Muir. Materia Medica.	Adams. Horse- shoeing.	Marshall. Chemistry.		Muir. Materia Medica.	

## FIRST YEAR.—1908-1909. AFTER FEBRUARY 1.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 to 10 A. M.	Gay. Animal Industry.					
10 to 11 A. M.	Gymnasium.	Marshall. Physi. Chem.	Chemical Laboratory. Section (B).	Chemical Laboratory. Section (A). Dissecting Section (A).	Chemical Laboratory. Section (B). Dissecting Section (A).	Chemical Laboratory. Section (A). Dissecting Section (B).
11 to 12 A. M.	11.30 Marshall. Phys. Chem.		Dissecting Section (A).			
12 to 1 P. M.	12.30 Harger. Anatomy.	Marshall. Botany.		Gymnasium.	Harger. Anatomy.	Harger. Anatomy.
2 to 3 P. M.	Muir. Materia Med. & Pharmacy. Section (B). Dissect'g (A).			Muir. Materia Med. & Pharmacy. Section (A). Dissect'g (B).	Marshall. Botany.	
3 to 4 P. M.		Dissecting.	Dissecting.			
4 to 5 P. M.	Muir. Pharmacy. Lecture.			Muir. Pharmacy lecture.	Gay. Animal Industry.	
5 to 6 P. M.						
7.30 to 9 P. M.						

## SECOND YEAR.—1908-1909. BEFORE FEBRUARY 1.

<i>Hour.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
8 to 10 A. M.	Pearson. Clinic.	Adams. Clinic.	Harger. Clinic.	Pearson. Clinic.	Adams. Clinic.	Harger. Clinic.
10 to 11 A. M.	Pearson. Medicine.	Pearson. Medicine.	Adams. General Surgery.	Adams. General Surgery.	Adams. General Surgery.	Harger. Anatomy.
11 to 12 A. M.	Harger. Anatomy.	Smith. Pathology.	Gay. Conformation and Animal Judging.	Smith. Pathology.	Smith. Pathology.	Smith. Pathology.
12 to 1 P. M.			Pearson. Medicine.	Underhill. Zoology.		
2 to 3 P. M.		Smith. Reichel. Comparative Pathology. Histology. 1.30 to 4.	Lodholz. Physiology.	Lodholz. Physiology.	Lodholz. Physiology.	
3 to 4 P. M.	Gay. Animal Judging. Practicums.					
4 to 5 P. M.			Dissecting. 3 to 6.	Dissecting. 3 to 6.	Dissecting. 3 to 6.	
5 to 6 P. M.		Dissecting. 4 to 6.				

## SECOND YEAR.—1908-1909. AFTER FEBRUARY 1.

<i>Hour.</i>	<i>Monday.</i>	<i>Tuesday.</i>	<i>Wednesday.</i>	<i>Thursday.</i>	<i>Friday.</i>	<i>Saturday.</i>
8 to 9 A. M.	Pearson. Clinic	Adams. Clinic.	Harger. Clinic.	Pearson. Clinic	Adams. Clinic.	Harger. Clinic.
9 to 10 A. M.						
10 to 11 A. M.	Pearson. Medicine.	Pearson. Medicine.	Adams. Surgery.		Adams. Surgery.	Gay. Animal Industry.
11 to 12 A. M.	Adams. Surgery.	Bergey. Bacteriology.	Bergey. Bacteriology.	Bergey. Bacteriology.	Gay. Animal Industry.	
12 to 1 P. M.	12.30 Harger. Anatomy.	Bergey. Bacteriology.	Bergey. Bacteriology.		Harger. Anatomy.	Harger. Anatomy.
2 to 3 P. M.	Harshberger. Zoölogy.	Smith. White. Reichel. Pathological Histology.	Lodholz. Physiology.	Lodholz. Physiology.	Lodholz. Physiology.	
3 to 4 P. M.	Dissecting.		Pearson. Medicine.	Dissecting.	Dissecting.	
4 to 5 P. M.						
7.30 to 9 P. M.	Dissecting.	Dissecting.	Dissecting.	Dissecting.	Dissecting.	

## THIRD YEAR.—1908-1909. BEFORE FEBRUARY 1.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
8 to 10 A. M.	Pearson. Clinic.	Adams. Clinic.	Harger. Clinic.	Pearson. Clinic.	Adams. Clinic.	Harger. Clinic.
10 to 11 A. M.	Pearson. Medicine.	Pearson. Medicine.	Gay. Animal Industry.	Campbell. Milk Hygiene.	Hoskins. Juris- prudence.	Reichel. Laboratory Diagnosis.
11 to 12 A. M.	Conard. Obstetrics.	Wood. Physiological Action of Drugs.	Adams. Special Surgery.	Adams. Special Surgery.	Adams. Special Surgery.	
12 to 1 P. M.		Gay. Animal Industry.	Pearson. Medicine.			
2 to 3 P. M.	White. Morbid Anatomy.	Adams. Lentz. Operative Surgery. 2 to 5.	Gay. Animal Industry. Practicum. 2-5.	Glass. Canine Medicine.	Written Exercises.	
3 to 4 P. M.						
4 to 5 P. M.	Castor. Meat Hygiene.			Wood. Physiological Action of Drugs.		
5 to 6 P. M.	Hospital Visit.	Hospital Visit.	Hospital Visit.	Hospital Visit.	Hospital Visit.	

## THIRD YEAR.—1908-1909. AFTER FEBRUARY 1.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
8 to 9 A. M.	Pearson. Clinic.	Adams. Clinic.	Harger. Clinic.	Pearson. Clinic.	Adams. Clinic.	Harger. Clinic.
9 to 10 A. M.	Pearson. Medicine.	Pearson. Medicine.	Adams. Surgery.		Adams. Surgery.	
10 to 11 A. M.	Adams. Surgery.	White. Morbid Anatomy. Demon- strations.			Conard. Obstetrics.	Gay. Animal Industry.
11 to 12 A. M.						
12 to 1 P. M.	Hoskins. Jurisprud'ce.				Conard. Milk Hygiene	
2 to 3 P. M.	Gay. Practicum. 2-6.	Operative Surgery.	Glass. Canine Medicine.	Adams. Lentz. Operative Surgery		
3 to 4 P. M.			Pearson. Medicine.		Gay. Animal Industry.	
4 to 5 P. M.		Wood. Pharmaco- dynamics.				
5 to 6 P. M.					Castor. Meat Hygiene	

**SUBJECTS OF INSTRUCTION.**

The subjects of instruction offered by the Faculty of Veterinary Medicine are described below under the following heads: Chemistry; Materia Medica and Pharmacy; Physiology; General Biology; Botany; Zoölogy; Animal Industry; Anatomy; Histology; Horse-shoeing; Therapeutics; Pathology; Theory and Practice of Veterinary Medicine; Surgery; Obstetrics; Meat Hygiene; Milk Hygiene and Veterinary Jurisprudence, Ethics and Business Methods.

**CHEMISTRY.**

Dr. MARSHALL, Dr. FETTEROLF.

Instruction in Chemistry is confined to the first year of the course. During the period from the beginning of the session until February 1, three lectures on general chemistry are given each week, in which theoretical chemistry, systematic chemistry, and the general principles of volumetric analysis are covered. The course in the chemical laboratory requires six hours' attendance, in two periods of three hours each in each week, from the beginning of the session until February 1. The course in the laboratory covers qualitative analysis, including the writing of equations, and also includes work in quantitative analysis and acidimetry and alkalinometry.

During the period from February 1 until the end of the session, three lectures are given each week on physiological and pathological chemistry, urine analysis, and toxicology. The course in the chemical laboratory requires six hours' attendance, in two periods of three hours each in each week, from February 1 until the end of the session. The course in the laboratory covers physiological and pathological chemistry, urine analysis, and toxicology.

**MATERIA MEDICA AND PHARMACY.**

Dr. MUIR.

Materia Medica is taught in a series of about thirty-five lectures by the Lecturer on Materia Medica, and Pharmacy is taught by lectures and practical work in the Pharmaceutical Laboratory. These courses include the study of all the drugs and preparations in the U. S. Pharmacopœia that are in use in Veterinary Medicine; with the addition of other remedies, the use of which is adapted especially to any one class of animals studied in Veterinary Medicine (Herbivora or Carnivora). The student is required to handle the various drugs, in order to recognize their physical characteristics; to

make the ordinary pharmaceutical preparations (infusions, tinctures, extracts, electuaries, powders, boluses, ointments and blisters); and is instructed practically in the manual required for the administration of remedies in powder, bolus or fluid form to the Horse, Ox, Hog, and Carnivora.

During the second year, details of two students each, in alphabetical order, serve two weeks in the Pharmacy of the Hospital, and assist in compounding all the prescriptions used in the Clinical Department.

#### PHYSIOLOGY.

Dr. LODHOLZ.

The course in Physiology consists of lectures and demonstrations, in which the chemical and physical processes and constituents of the animal body are considered, and the different functions traced from their appearance in the lowest animal forms to their highest development in the domestic animals. Especial attention is given to the nutritive functions in domestic animals, rules being given for the adjustment of diet to the work required of the animal whether in beasts of burden, milk or wool producers, or in animals destined for food purposes. The lectures are illustrated by experiments, diagrams and tables. In connection with the course, the students are required to work in the Physiological Laboratory, where they study the chemical properties and general characteristics of food-stuffs, the analysis of milk, the action of the digestive juices, etc., etc.

The Physiological Laboratory is fitted with the most approved instruments for physiological research, and opportunity is offered to advanced students for conducting original research under the immediate supervision of the Professor.

#### GENERAL BIOLOGY.

Dr. HARSHBERGER.

In this course students are given practical training in the methods employed in biological research, so that they may acquire facility in the use of the instruments and processes required in the biological sciences. Especial emphasis is laid upon the practical aspects of the science as it relates to meat inspection and the veterinary art.

#### BOTANY.

Dr. HARSHBERGER.

The botanical instruction requires four hours each week during half of the first year. Two objects are kept in view. The first is,

to give a general idea of the anatomy and physiology of plants, of the principles of classification, and the doctrines of evolution. The second object is to train observers and to teach the practical relation of forage plants, poisonous plants, and noxious weeds, to the veterinary art. Special attention is paid to the study of the grasses, clovers, cereals and economic plants used as food for animals. Owing to the intimate relations between agriculture and veterinary medicine the usefulness and prosperity of the veterinarian often depends, to a considerable extent, upon his ability to recognize and to ascertain the importance of plants known or supposed to be injurious to our domestic animals, as well as the weeds and the useful forage plants met with in cultivated ground.

### ZOOLOGY.

Dr. HARSHBERGER.

In the course in General Zoölogy, occupying one hour per week during the second year, especial emphasis is laid on the classification of animals and their structure. The parasites of domestic animals are studied in some detail by the aid of charts and specimens, so that a foundation is laid for future work in meat inspection where an acquaintance with the subject of parasites and parasitology is necessary. The principal worm, insect and protozoan parasites are considered and their structure explained.

### ANIMAL INDUSTRY.

Dr. GAY.

The course in Animal Industry is graded and comprises two lectures a week for three years; it covers the four chief phases of livestock work, namely: the judging, breeding, feeding and management of horses, cattle, sheep and swine. It is introduced by discussions of the feral animal in the native state, natural selection and the survival of the fittest, the advent of man as a controlling factor, the husbandman and domestication, together with facts and men of note in breed and animal history. Then follows the study of individual conformation; market and breed types, the origin, history, and development of the breeds; the principles of breeding, heredity, environment and selection; the principles of animal nutrition, composition of food stuffs, balanced rations, practical feeding and the economic production of beef, milk, mutton and pork; care of the breeding stud, herd or flock, fitting for the market or show; advertising and sales.

In addition to the classroom work, there is practical instruction in preparing pedigrees, in the examination of forage and food stuffs, in judging animals, and outside visits are made for the purpose of illustrating types and breeds of animals and to gain and impart information in relation to the care, management and utilization of animals of the various classes.

#### ANATOMY.

Dr. HARGER, Dr. SENSEMAN, Dr. LENTZ.

The instruction in Descriptive Anatomy extends over two entire sessions, and embraces the study of the bones, articulations, muscles, digestive tract, respiratory apparatus, urino-genital organs, organs of circulation of the blood and lymph, nervous system, organs of special sense, and embryology of the Horse, Ox, Sheep, Goat, Hog, Dog, Cat and Poultry. Constant dissection is required. The horse is used as the type until the parts have been thoroughly learned, and the student is then given other animals, to learn existing differences. During the first year the dissections are made with special reference to the bones, articulations, and muscles, while the second year is devoted to blood-vessels and nerves and viscera. The dissections are under the supervision of the Professor of Anatomy, aided by the Demonstrators. A detail is made of students of the Second-year Class, who dissect in the laboratory of the Professor of Anatomy, and prepare the parts to be used in his lectures.

#### HISTOLOGY.

Dr. ADDISON.

The Histological Laboratory has a complete equipment of excellent modern microscopes and all other apparatus necessary for the training in this subject. The course extends over a half-year, during which time each student is required to mount, study and draw preparations of all the important tissues and organs of the animal body. These are taken from the various classes of domestic animals which are of importance in Veterinary Medicine.

#### HORSESHOEING.

Dr. ADAMS, Mr. ENGE.

The course in Shoeing for first-year students embraces about forty lectures illustrated by charts, prepared hoofs and shoes, frequent visits to the shoeing forge, and practical demonstrations upon the living horse at rest and in motion. Instruction is given

under the following headings: anatomy of the legs below the middle of the canons, forms of feet as determined by natural causes, physiological movements of the foot, lines of flight of the hoof, the preparation of hoof and shoe, fitting and nailing; winter shoeing; the correction of vicious gaits; pathological shoeing.

A large amount of shoeing is done at the forges of the Hospital, affording ample experience in methods demanded by different classes of horses, and by the various forms of the horse's foot.

### BACTERIOLOGY.

Dr. BERGEY.

The course in Bacteriology consists of lectures and demonstrations to the students of the second year, in which the elementary principles of the science are explained as well as the practical application of Bacteriology to Veterinary practice. Each student is assigned a place in the laboratory and is given the necessary apparatus and appliances to make it possible for him to familiarize himself with the methods of cultivating bacteria and of isolating them in pure cultures; the steps necessary for the identification of particular species of bacteria; the relation of bacteria to infection; and the methods of sterilization and disinfection. Special attention is given to those bacteria which are concerned in animal pathology, and the methods of combating the diseases produced by these bacteria.

The student is also introduced to the important field of microbiology, especially to the organisms of the vegetable kingdom which are of a higher order and of greater complexity than the bacteria, and to the microscopic animal parasites which are concerned in animal pathology.

### THERAPEUTICS.

Dr. Wood.

This course, extending over one session of the Medical Department, is devoted especially to the physiological action of drugs.

### PATHOLOGY.

Dr. SMITH, Dr. WHITE, Dr. REICHEL.

Instruction in Pathology is given in the second and third years of the course. In the second year are given lectures on general pathology, in which are considered the degenerative and infiltrative processes, necrosis, atrophy, hypertrophy, circulatory faults, inflam-

mation and specific inflammations, tumor formation and the development of monsters; and during the same period exercises and demonstrations covering the same field are given in the laboratory of pathological histology. In the third year demonstrations in gross morbid anatomy and the practice of post-mortem examinations are conducted before the class, the members taking active part in the autopsies of animals which die in the Veterinary Hospital.

#### THEORY AND PRACTICE OF VETERINARY MEDICINE.

Dr. PEARSON, Dr. C. J. MARSHALL, Dr. REICHEL.

Instruction in the Theory and Practice of Veterinary Medicine embraces general veterinary sanitary science and the control of animal plagues. The lectures are graded; they cover two years and are given under the following headings:

Origin of Veterinary Medicine; history of Veterinary Science and of Veterinary Schools; medical doctrines; classes of diseases; clinical examination and physical diagnosis; diseases of the systems and groups of organs, including their etiology, pathogenesis, alterations, symptoms, diagnosis, treatment and prevention; general diseases; contagious and zymotic diseases, with the principles of Veterinary Sanitary Science and Police and the private and public regulations and measures to be employed in their control, with the laws of sanitary police in force in various parts of the United States and in Europe; parasitic diseases and helminths.

The lecture room instruction is supplemented by clinical exercises covering two years and by practical demonstrations.

#### VETERINARY SURGERY.

Dr. ADAMS, Dr. LENTZ.

This branch of Veterinary Medicine is taught to the Second- and Third-year classes by a graded course of didactic lectures, and by clinical instruction, extending over a period of two years.

One year is devoted to General Surgery, and comprises a course of about one hundred lectures. The second year is devoted to Special Surgery, and comprises about ninety lectures. The Second-year Class is given practical exercises in foot operations, casting and methods of restraint.

The Third-year Class is required to devote five hours each week to Practical Operative Surgery, when the *modus operandi* of every operation likely to occur in Veterinary practice is taught. Instruc-

tion in bandaging and wound dressing is given in connection with Operative Surgery.

The systematic instruction in Veterinary Surgery is supplemented by demonstrations and practical exercises in the clinics.

#### OBSTETRICS.

Dr. ADAMS, Dr. CONARD.

The Senior Class receives a full course of instruction comprising about forty lectures amply illustrated. Whenever possible cases of natural labor occurring in the Hospital and on the farm are utilized to the best advantage.

#### MEAT HYGIENE.

Dr. PEARSON, Dr. CASTOR.

The Third-year Class receives a course of about thirty lectures on meat inspection, in which are discussed the origin of this branch of veterinary work and the manner in which it is conducted at the present time, the physical and chemical properties of the meat of various animals used for food, the qualities of meat, noxious and injurious meats, the pathology and differential diagnosis of the various diseases which render carcasses unwholesome and unfit for food purposes, the parasites of the domestic animals that are of importance in the meat inspection work, etc., etc.

The students also have the privilege of visiting the various slaughter houses in the city and observing the inspection work as it is carried on by the United States Bureau of Animal Industry.

The Federal government has recently made a general increase of salaries owing to the difficulty which the Civil Service Commission has experienced in obtaining a sufficient number of qualified veterinarians to meet the requirements of the meat inspection service. Veterinary inspectors in the Federal service are now employed at a salary of \$1400 per annum, with an increase to \$1600 after two years efficient service and a further increase to \$1800 after two years service at \$1600.

#### MILK HYGIENE.

Dr. PEARSON, Dr. CONARD, Dr. CAMPBELL.

This course includes dairy and milk inspection. It comprises the hygienic production of milk; herd and dairy farm sanitation; the harmful contaminations of milk, the physical properties and chemical composition of milk, adulterations of milk, and their

detection; the protection of milk from the cow to the consumer. Economic production and the production and marketing of certified milk are also discussed. Illustrated by demonstrations and visits to typical establishments.

#### VETERINARY JURISPRUDENCE, ETHICS AND BUSINESS METHODS.

Dr. HOSKINS.

This course covers the various laws relating to the sale and warranty of all domestic animals, the duties of common carriers, the relative rights of the users of public highways and the relation of the veterinarian to the public and his client. The ethical relations of the veterinarian as established by the schools, national and state laws, and the moral obligations of associations and other bodies. Business methods that tend to define for the student and future practitioner the relations that the commercial aspect of his work bear to the scientific, and expert evidence.

#### HOSPITAL AND CLINICS.

Dr. HARGER, Dr. PEARSON, Dr. ADAMS, Dr. KERR.

Daily clinical experience and instruction are provided for the members of both the Second- and the Third-year classes. Third-year students are placed directly in charge of cases, and under direction of the House Surgeon, keep the clinical records, administer the medicines, attend to the surgical dressings; and are allowed, under the supervision of the Clinical Professors, to perform whatever operations are necessary, in so far as this can be done with perfect safety to the animal. Four students from the Third-year Class are assigned to reside in the Hospital and act as aids to the Resident Surgeon.

A detail from the Second-year Class assists in compounding all medicines used in the Hospital.

The large number of animals in the wards of the Hospital, and those from the extensive free dispensary practice of the Hospital treated at the clinic daily, from 8 to 10 A. M., furnish abundant material for clinical lectures and practical instruction.

#### MUSEUM.

The large and valuable museum of the Veterinary School was lost by fire in 1905. Since that time, a new collection has been established and it has grown both through the preparations made

in the dissecting room, post-mortem room and the farriery, and through the liberality of veterinarians. It is now a useful working collection and is being enlarged as rapidly as possible.

#### EXAMINATIONS AND DEGREE.

Examinations are held in February and at the close of each year. These the student must duly pass before he is allowed to proceed to the studies of the next year. At the close of the course, and after passing a satisfactory examination, the student receives the degree of Doctor of Veterinary Medicine (*Veterinariae Medicinae Doctor: V. M. D.*).

#### PRIZES.

The J. B. LIPPINCOTT PRIZE of One Hundred Dollars is offered to the member of the Graduating Class who, in the three years spent in the Veterinary Department of the University, attains the highest general average in examinations.

A PRIZE of a veterinary instrument is offered by a friend of the Department to the member of the Second-year Class who passes the best examination in Veterinary Anatomy.

#### TUITION FEES AND EXPENSES.

A matriculation fee of \$5.00 is charged to every candidate for admission. The tuition fee is \$100 per annum, of which one half (\$50.00) is due October 1, and one half (\$50.00), February 1. A fee of \$10.00 is added to the tuition fee of every student in the Veterinary Department for the privileges of the Gymnasium and Houston Club. This fee is payable in two equal parts, on October 1 and February 1. Remittances should be for the exact amount due, and should be in cash or by bank draft, certified cheque, or postal money order. Under no circumstances are any changes made in the established fees.

Each student is required to make a deposit of ten dollars (\$10.00) in the Bursar's office, to cover breakage in the Department. Any balance remaining at the end of the year is returned to the depositor. Material for dissection is charged for at the rate of \$1.40 a part. The fee for material used in operative surgery is in proportion to the amount of material used.

A penalty is added to fees not paid within thirty days of the time they are due. All fees are payable at the Bursar's office, Room 102, College Hall.

*First Year.*

Matriculation Fee .....	\$5 00
Tuition Fee .....	100 00
Use of Dissecting Material (about).....	6 50
Fee for Gymnasium and Houston Club .....	10 00
	<hr/>
	\$121 50

*Second Year.*

Tuition Fee .....	\$100 00
Use of Dissecting Material (about).....	6 50
Fee for Gymnasium and Houston Club .....	10 00
	<hr/>
	\$116 50

*Third Year.*

Tuition Fee .....	\$100 00
Use of Material for Operative Surgery (about)	10 00
Fee for Gymnasium and Houston Club .....	10 00
	<hr/>
	\$120 00

Books and instruments in the first year of the course will cost about \$28.00; in the second year, about \$25.00; and in the third year, including a case of surgical instruments, about \$31.00. All of the instruments used in the course will be required by the graduate in the practice of his profession.

For further information apply to

LEONARD PEARSON, Dean,  
New Veterinary Building, N. E. cor. Thirty-ninth street  
and Woodland avenue, Philadelphia.  
Office hours, 8.30 A. M. to 12 M., daily.

## PHYSICAL CULTURE.

The courses in Physical Culture, and the use of the Gymnasium facilities, are under the direction of Prof. R. Tait McKenzie, M. D. Two hours a week of graded physical culture is an obligatory part of the curriculum for all students of the first year, excepting those who have previously had an equivalent course in physical training elsewhere and those who for reasons of physical disability are excused by the Director.

## VETERINARY HOSPITAL.

Thirty-ninth street and Woodland avenue, Philadelphia.

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### BOARD OF MANAGERS.

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### HOSPITAL STAFF.

SIMON J. J. HARGER, V. M. D., Professor of Veterinary Anatomy.

LEONARD PEARSON, B. S., V. M. D., M. D., Professor of the Theory  
and Practice of Veterinary Medicine.

JOHN W. ADAMS, A. B., V. M. D., Professor of Veterinary Sur-  
gery and Obstetrics.

JAMES G. KERR V. M. D., Resident Surgeon.

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The VETERINARY HOSPITAL of the University of Pennsylvania is supplied with facilities for the handling and care of sick and injured animals of all kinds. Animals are admitted into the Hospital at any time, day or night.

Two ambulances are provided for the conveyance of sick and lame animals, one for horses and the other for small animals. For this service the charges are made according to the distance traveled.

A free dispensary clinic is conducted by the members of the Hospital Staff daily, except Sundays, between 8 and 10 A. M.

The animals are under the professional care of the Hospital Staff and of the Resident Physician.

4,383 animals were treated in the Hospital during the year ending August 31, 1908.

A competent farrier is attached to the Hospital, who is prepared to do a limited amount of ordinary shoeing, in addition to shoeing for lameness; the latter *only* under the direction of the Hospital Staff.

## **PART III**

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### **AUXILIARY DEPARTMENTS**



## UNIVERSITY LIBRARY.

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CHARLES C. HARRISON, LL. D., PROVOST.

EDGAR F. SMITH, PH. D., Sc. D., LL. D., VICE-PROVOST.

MORRIS JASTROW JR., PH. D., *Librarian*.

KATHARINE S. LEIPER, *Assistant Librarian*.

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The LIBRARY is one of the original Departments of the University, possessing among its treasures works presented to the Academy of Philadelphia in 1749; others purchased by a committee of which Benjamin Franklin was chairman in 1750; and still others given by the Rev. William Smith, D. D., first Provost of the College and Academy of Philadelphia; by Louis XVI.; and by other early friends and patrons. It now contains 285,015 catalogued volumes and upwards of 50,000 unbound pamphlets

Special libraries obtained through gift or purchase form the basis of collections as follows:

Philosophy,	Chemistry,
Spiritualism,	Botany and Zoölogy,
United States Laws,	Geology and Paleontology,
Law,	Mathematics,
Economics,	Civil and Mechanical Engineering,
Philology,	Medicine,
Classical Literature,	Agriculture,
English Literature,	Horsemanship,
Germanics,	American History,
Italian Literature,	Music,
Semitics,	Archaeology and Ethnology,
Russian Literature,	Official Publications of the United
American Languages,	States and Foreign Govern-
Chinese and Japanese,	ments

The Harrison Fellowship Funds established upon the GEORGE LEIB HARRISON FOUNDATION (see p. 319) and now amounting to \$1,900 per annum, have been in large part expended, by direction of the Provost, in the purchase of books and have proved a most

valuable means of enriching the University's equipment for the prosecution of research.

In October of 1905 a special grant of \$5,000 from the **GEORGE LEIB HARRISON FOUNDATION** was made by direction of the Provost for further purchases of books and for the completion of sets of periodicals in the various branches of research represented in the Graduate School.

The **KRAUTH LIBRARY**, founded by the Society of the Alumni in honor of the late Vice-Provost of the University, the Rev. Charles P. Krauth, D.D., and the **BENJAMIN BARTIS COMEGYS, JR., LIBRARY**, cover the subjects of Philosophy and Ethics.

Numerous and valuable additions to the collection in Philosophy have been made through a fund of \$1,750 presented by the College Class of 1889.

The **HENRY SEYBERT LIBRARY** of Modern Spiritualism embraces a large collection of works on that and cognate subjects.

The **BIDDLE MEMORIAL LAW LIBRARY**, founded in 1886, constitutes the library of the Department of Law, and occupies the entire second floor of the building of that department. The library was established by the family of George W. Biddle as a memorial to his three sons, George, Algernon Sydney, and Arthur Biddle. The original gift of five thousand volumes from the Biddle family was supplemented in 1897 by the presentation by Mrs. Arthur Biddle of over four thousand volumes which had formed the library of the late Arthur Biddle, Esq. Many valuable gifts have also been received from families and individual donors. Provision was made for the support of the library by a stipulation in the deed of gift that a certain proportion of the receipts of the Law Department should be devoted to the purchase of books for the Biddle Memorial Library each year. This wise provision has enabled the library to show a steady growth, the total number now being over 40,000. This collection not only represents a complete working library for the undergraduate students, but it also offers to the graduate student a very valuable, and in some respects unique, collection of the earlier legal treatises published during the sixteenth and seventeenth centuries.

The **BRINTON COXE LIBRARY**, deposited by the late Brinton Coxe, and subsequently presented to the University, consists of several hundred works dealing largely with Constitutional Law.

The **COLWELL LIBRARY**, the munificent gift of the late Stephen Colwell, consists of over 7,000 volumes, and is an exceedingly rich and complete collection of works and pamphlets on Finance and

Political Economy published before 1860. It is supplemented by the CAREY LIBRARY, the bequest of the late Henry C. Carey, which embraces many books of more recent date.

The CAREY LIBRARY is especially rich in statistics, European government reports, and the like, and includes about 3,000 English pamphlets on Finance, bound in chronological order, and covering the period from the close of the seventeenth century to our own time.

The ALLEN LIBRARY includes about 5,000 volumes relating to Bibliography, Greek and Latin Literature, Military Science, and Shakespeare, selected with great care by their former owner, the late Professor George Allen, LL. D., of the University.

The POTT LIBRARY, purchased by private subscription, embraces the philological library of the late Professor F. A. Pott, of the University of Halle, and contains about 4,000 works, representing almost every language and dialect of any prominence.

The LEUTSCH LIBRARY, likewise purchased by private subscription, comprises the classical library of the late Professor Ernst von Leutsch, of the University of Göttingen. It contains about 20,000 volumes, and is one of the best classical collections in this country.

The WYLIE LIBRARY presented by the executors of the late Rev. Dr. T. W. J. Wylie, consists of about 350 works, chiefly old editions of the Greek and Latin writers.

The J. B. LIPPINCOTT LIBRARY, founded by the family of the late J. B. Lippincott, embraces an ever-growing collection of books on English Literature. A special fund has been secured by private subscription for the purchase of early editions of old English plays.

The BECHSTEIN LIBRARY, comprising books relating to Germanic Philology and Literature, contains about 15,000 volumes and pamphlets. This collection, which belonged to the late Professor R. Bechstein, of the University of Rostock, is particularly rich in standard editions of the works of all the representative German writers from the beginning to the present time. The special features of the collection are reviews and publications of learned societies (including about fifty complete sets) and a unique collection of about 3,000 pamphlets relating to German Philology and Literature.

The FRANCIS C. MACAULEY LIBRARY bequeathed by him to the University, comprises a most valuable collection on Dante, Petrarch and Tasso, besides a large number of Italian, Spanish and Portuguese works, amounting to about 5,500 bound volumes, pamphlets and periodicals. The Dante collection ranks second of those in this country. A sum of \$5,000 was also bequeathed by Mr. Macauley,

the interest of which is used in making additions to the collection.

The Library of Semitic Philology and Literature, comprising extensive collections in Arabic, Assyrian, Hebrew and in Semitic Epigraphy, has been augmented by the purchase of the greater portion of the library of the late Professor C. P. Caspari, of Copenhagen, which was especially rich in older works dealing with Hebrew and the Old Testament, Church History and Christian Theology. The nucleus of a manuscript collection has been formed through the purchase of some Arabic and Ethiopic manuscripts and the library also possesses a choice collection of Arabic and Hebrew books printed in the East and of great value for the study of Arabic dialects.

The MARCUS JASTROW MEMORIAL LIBRARY, presented to the University in memory of the late Rev. Marcus Jastrow, Litt. D., consists of about 1,500 volumes, covering chiefly Hebrew and Rabbinical literature.

The MCCARTEE LIBRARY, presented by the late Dr. D. B. McCarteree, comprises nearly 1,000 volumes in Chinese and Japanese, and over 200 in European languages concerning the history and literature of China and Japan.

The BRINTON LIBRARY, presented by the late Professor Daniel Garrison Brinton, consists of over 4,000 bound volumes, and about 1,000 bound pamphlets. It deals chiefly with the languages and archaeology of Mexico and Central and North America, but also contains numerous works on Physical Anthropology, Ethnology and General Archaeology. A unique feature of this library is the Bendt collection of 183 manuscripts, constituting original sources for the study of American languages.

The TOWER LIBRARY, presented by the Hon. Charlemagne Tower, consists of about 2,300 volumes in Russian, covering chiefly the fields of Literature and History.

The FRAZER LIBRARY, presented by pupils and friends of the late Professor John F. Frazer, consists of about 1,000 volumes on Chemistry, Physics and Astronomy.

The WETHERILL LIBRARY consists of works on Chemistry.

The HAYDEN, LEIDY AND RYDER LIBRARIES comprise several thousand works on Geology, Paleontology, Zoölogy and Botany.

The valuable Biological library of the late Professor E. D. COPE was, by his will, conveyed to the University. It includes about 3,000 volumes, and is especially rich in works of Vertebrate Anatomy and Paleontology.

The **BARTRAM MEMORIAL LIBRARY**, collected by the John Bartram Association, and presented to the University, consists at present of about 150 works on Botany.

The **KENDALL LIBRARY** of Mathematics, consisting of several hundred volumes, was presented by the late Professor E. Otis Kendall.

The **EVANS ROGERS LIBRARY** is composed of standard works on drawing, mathematics, astronomy, physics, surveying and explorations; as well as of technical works on roads, strength and properties of materials, railroads, tunnels, canals, water-supply, drainage, architecture, mechanics, navigation, harbor improvements, and park and landscape engineering. It contains also a valuable collection of reports of American, English and French Engineering Societies, periodicals, coast survey and hydrographic charts, maps, diagrams and drawings.

The **STILLÉ LIBRARY**, presented by the late Dr. Alfred Stillé, and the **WILLIAM PEPPER LIBRARY**, representing purchases out of a fund presented by the late Dr. William Pepper, embrace about eight thousand works on the subject of Medicine.

The **THOMAS POTTER MEDICAL LIBRARY** consists of several hundred volumes bequeathed by the late Dr. Thomas Potter.

The **RUSH S. HUIDEKOPER LIBRARY** on Veterinary Medicine, presented by Dr. Thomas B. Rayner, in memory of his son, Moncure R. Rayner, and consisting of about 2,000 volumes, embraces sets of important periodicals, standard works and numerous monographs on Veterinary Medicine and Surgery.

The **LIBRARY of the PHILADELPHIA SOCIETY FOR PROMOTING AGRICULTURE**, the oldest organization of the kind in the United States, consists of about 700 volumes, many of them now rare, pertaining to agriculture. It was presented by the Society to the University in 1888.

The Medical Library of the **WEST PHILADELPHIA MEDICAL LIBRARY CLUB**, presented by the Club to the University, consists of sets of important medical periodicals, and a large number of separate works covering the various branches of Medicine.

The **FAIRMAN ROGERS LIBRARY**, presented by the late Fairman Rogers, consists of a large and valuable collection of works on Horses and Equitation.

The **HENRY MORTON LOVERING, JR., Memorial Collection**, presented by Mrs. J. Hartley Merrick, consists of violoncello scores.

The collection of books relating to American History and Insti-

tutions consists of about 12,000 volumes, classified and arranged as follows: National Documents—a practically complete legislative record of the Government of the United States, 1789 to date; State Documents; Canadian Public Documents, 1843-1890; Municipal Ordinances and Documents of American Cities; the Laws of the States and Territories, 1840-1890; the Laws of the United States; the John A. Jameson Library of American Constitutional Conventions, Debates, Journals, etc.; the Robert Purvis Collection of Anti-Slavery Literature; the Friends' Library; works on American History and Government; and a collection of pamphlets and newspapers.

The CHARLES J. STILLÉ LIBRARY of Medieval and General History embraces a portion of the historical library of the late Dr. Stillé (Provost of the University of Pennsylvania, 1868-1880), to which additions are made from a special fund contributed by the late Mrs. C. J. Stillé.

The LAMBORN LIBRARY, deposited by the late Dr. Robert H. Lamborn, and subsequently presented by his heirs, consists of about 2,500 volumes on ethnology, travels and archaeology. It contains a large number of very valuable and rare works, and is especially rich in books pertaining to the antiquities of Mexico.

The HOUGH Collection, forming part of the library of the late Dr. J. Stockton Hough, and purchased by private subscription, consists of 1,900 volumes, and is of special value in its bibliographical and biographical sections.

The WILLIAM CAMAC Memorial Collection, presented by his son, William Masters Camac, Esq., consists of certain Arabic and Hebrew manuscripts, and a number of rare and curious books of a miscellaneous character.

Large additions have been made to the University collections of public documents of foreign countries. Among the more important may be mentioned a complete set of Hansard's Parliamentary Debates, presented by the Hon. William Potter; an extensive collection of English government publications purchased out of a special fund given by Miss Mary K. Gibson; 900 volumes of French legislative documents; and the entire proceedings and other documents of the Reichstag since the founding of the German Empire.

Valuable additions have been made to the department of history and literature from the income of the TOBIAS WAGNER LIBRARY FUND, given to the University in memory of a deceased Trustee.

The ISAAC NORRIS LIBRARY, representing purchases out of a

fund given by Mrs. Mary Cochran Norris, comprises a steadily increasing number of books on various subjects.

The CRAWFORD LIBRARY, the gift of Major-General Samuel Wylie Crawford, M. D., LL. D., consists of about 1,000 volumes on a great variety of subjects, literary, scientific and historical.

The GEORGE DE BENNEVILLE KEIM LIBRARY, presented by Mrs. Keim in 1897, consists of a miscellaneous collection of about 1,000 volumes.

The ZELOSOPHIC SOCIETY of the University (founded 1829), has presented its collection, consisting of about 400 volumes, to the University Library.

Mrs. Julia Biddle bequeathed to the University the library of her husband, the late THOMAS A. BIDDLE. It consists of nearly 1,800 volumes of standard English and French Literature, including many handsomely illustrated works.

The University of Chili has presented to the University a collection of about 450 volumes, covering official and university publications on administration, history, education, science and literature.

The Butcher collection of photographs, the gift of the late Mrs. Rosalie Butcher, consists of upwards of 1,500 photographs of paintings and sculptures in European galleries and of views of notable buildings, of striking natural scenery, etc.

The Library also possesses a valuable collection of over 800 letters and documents from the papers of Benjamin Franklin, and which were secured by purchase through friends of the University in 1903.

The Library is also engaged in an effort to collect publications and memorabilia bearing on the history of the University. In this effort it has been assisted by Dr. William Pepper, who from time to time has presented early and rare publications of professors and others connected with the institution.

In exchange for copies of various University publications, the Library is in annual receipt of a large number of periodicals, and of periodical publications and monographs of learned societies in various parts of the world, as well as the journals, dissertations and scientific contributions of the leading educational institutions in this country and abroad. In addition the Library receives as a depository the documents and publications of the United States Government, and from foreign governments likewise official publications in considerable numbers. The reports of all the important railroad corporations and banking associations are forwarded to the Library; and arrangements have been made to receive regularly state docu-

ments and official reports of the more important municipalities in the United States and Europe. The Library has also been made a depository for the printed catalogue cards of the Congressional Library, which are kept in separate catalogue cases.

The Library is open daily, except Sundays and holidays, from 8.30 A. M. to 10 P. M. (during the summer vacation, 9 A. M. to 5 P. M., and during the sessions of the Summer School, from 8.30 A. M. to 5 P. M.), and the Seminary rooms in the Library building, till 11 P. M.; and both professors and students (the latter upon presenting their matriculation cards) are permitted to take out books. Graduates of all departments of the University, and other persons recommended by officers of the University, are granted the same privilege, on the annual payment of three dollars. The Library is open freely to the public for consultation, including the unrestricted use of its collections within the library building.

## **THE WISTAR INSTITUTE OF ANATOMY AND BIOLOGY.**

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**TRUSTEES OF THE ENDOWMENT**  
**THE TRUST COMPANY OF NORTH AMERICA**  
**THE GIRARD TRUST COMPANY.**

*Co-Trustee:*  
**EDWARD D. TOLAND.**

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THOMAS WISTAR, M. D.

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#### SCIENTIFIC STAFF.

MILTON J. GREENMAN, PH. B., M. D., *Director.*

HENRY H. DONALDSON, PH. D., Sc. D., *Professor of Neurology.*

\* \_\_\_\_\_ *Associate in Neurology.*

SHINKISHI HATAI, PH. D., *Associate in Neurology.*

\* \_\_\_\_\_ *Associate in Anatomy.*

J. MACPHERSON STOTSENBURG, M. D., *Curator and Junior Associate in Anatomy.*

HORACE JAYNE, M. D., PH. D., *In charge of the Department of Publications.*

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CLARA N. PERINE, *Librarian.*

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In 1892 a charter was secured by General Isaac J. Wistar, of Philadelphia, from and under the laws of the Commonwealth of Pennsylvania, conferring perpetual incorporation, with the right of perpetual succession and a corporate seal, upon a corporation to be called "The Wistar Institute of Anatomy and Biology."

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\* Vacancies to be filled.

The museum, commonly known for many years as the Wistar or Wistar and Horner Museum, and a plot of ground, were presented by the University of Pennsylvania to the Wistar Institute.

A modern fireproof building was erected in 1893, and an addition in 1897, costing in all about \$170,000. An endowment yielding an annual income of about \$40,000 was established. The buildings and endowment were gifts of General Isaac J. Wistar, and by his will the Institute becomes the residuary legatee to his estate, thus insuring a most promising and stable future.

The Wistar Institute was established as a corporation to serve all institutions alike in the encouragement of original scientific research in anatomy and biology. Its laboratories and collections are open under suitable regulations and without cost, to investigators from all institutions, and to private individuals, who are capable of making proper use of its advantages. No undergraduate teaching of any kind is permitted.

The Wistar Institute publishes no regular catalogue or annual announcement, but its aims, facilities, reports and information which may be of interest to investigators in the promotion of this department of science will be published from time to time in the Bulletin of the Wistar Institute, the *Anatomical Record*, or the *American Journal of Anatomy*. The Bulletin may also contain calls for material, offers of material, requests for exchange of duplicate specimens and such other information as may be expected of a central anatomical institute.

In April, 1905, at the suggestion of the Director and with the approval of General Wistar, the donor, a broad and liberal step was taken by the Board of Managers. Invitations were issued by the Managers to ten leading American anatomists to meet at the Institute and discuss its future activity. The result of this conference was to organize an Advisory Board of Anatomists of the Wistar Institute, with authority to recommend to the Institute methods for the promotion of research anatomy and the organization of a central anatomical institute or "clearing house" for anatomy in America.

The Advisory Board recommended that the chief aim of the Institute be research; that the research should be in Neurology, Comparative Anatomy and Embryology; that research chiefs be appointed in one or more of these branches, and that relations be established with individual anatomists and American and European organizations whose aims were similar in the promotion of collective and co-operative investigation.

The organization of the present staff is in accordance with this advice. Collective and co-operative research is encouraged and directed by the Advisory Board. Three members of this Board, namely, Drs. Donaldson, Mall and Minot, are members of the Central Commission of the International Association of Academies for Brain Investigation, thus placing the Institute in close touch with the work abroad. In addition to its research and museum work the Institute publishes the following journals: *Journal of Morphology*, *The Journal of Comparative Neurology and Psychology*, *The American Journal of Anatomy*, *The Anatomical Record* and *The Journal of Experimental Zoölogy*. These journals comprise the principal independent anatomical journals published in the United States, and the Wistar Institute has assumed the responsibility for them as a co-operative measure and with the purpose of assisting the advancement of zoölogy in America.

The editorial responsibility for each journal rests in the hands of representative anatomists and zoölogists located in leading laboratories throughout the United States. Anatomical and zoölogical contributions of the proper kind and quality will be acceptable from any source for publication in these journals.

As a further co-operative effort the Institute will act as conservator of series of specimens or other material already studied which should be preserved for future reference, and which for this reason may be presented to the Institute. It is hoped that individual workers and institutions will bear in mind the value, for future studies, of preparations which have already served one research, and which should be preserved for future use. The Institute is prepared to take proper charge of such material.

The Institute will send out to investigators in other laboratories material for research work, which it may have in its museum or collect and prepare such material whenever this is possible.

Communications relative to any research work in anatomy for which materials or laboratory facilities may be desired may be addressed to the Director of the Institute in Philadelphia.

## LABORATORY OF HYGIENE.

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CHARLES C. HARRISON, LL. D., PROVOST.

EDGAR F. SMITH, PH. D., SC. D., LL. D., VICE-PROVOST.

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*Director*.—ALEXANDER C. ABBOTT, M. D., Sc. D.\*

*First Assistant*.—DAVID H. BERGEY, A. M., M. D.

*Associate in Bacteriology*.—NATHANIEL GILDERSLEEVE, M. D.

*First Assistant in Bacteriology*.—HARRY A. SHATZ, M. D.

*Second Assistant in Bacteriology*.—SYLVESTER J. DEEHAN, M. D.

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THOMAS A. SCOTT *Fellow in Hygiene*.—

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The LABORATORY OF HYGIENE of the University of Pennsylvania was formally opened on February 22, 1892. The building was the gift of Mr. HENRY CHARLES LEA, of Philadelphia, and the equipment was provided through the munificence of the late HENRY C. GIBSON, of Philadelphia.

### COURSES OF INSTRUCTION.†

#### I. COURSE IN PRACTICAL HYGIENE.

The course in Practical Hygiene consists of laboratory work upon the following subjects:

(1) The atmosphere, climate and meteorological observations and records, chemical analysis, bacteriological investigation, methods of investigation, methods of ventilation and heating.

(2) Water—physical, chemical and bacteriological investigations of water-supplies; methods of obtaining samples; qualitative

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\* Absent on Public Business.

† All applications for admission to these courses should be addressed to the Director, Laboratory of Hygiene, University of Pennsylvania.

and quantitative analysis for impurities; collection, storage, and purification of water intended for domestic use; effects of filters, aeration, etc.

(3) Sewage disposal, sewers, house drainage and the air of sewers.

(4) Disposal of refuse, cremation of garbage, etc.

(5) Soils and building sites, physical, chemical and bacteriological investigation, soil moisture, ground air.

(6) Foods—adulteration, milk and meat inspections.

(7) Clothing—microscopic examination, poisonous dyes.

(8) Management of contagious diseases. Practical tests of different methods of disinfection, chemical and thermal; notification, isolation and quarantine.

(9) Vital statistics, registration and methods of tabulation

(10) Offensive and dangerous trades.

The above course of instruction begins February 1 and ends April 1. It occupies five days in each week from 9 A. M. until 12 M. The course will not be given to less than five applicants. In order that persons taking the course may derive the greatest benefit from it, it is desirable for them to possess a practical familiarity with methods of chemical analysis. It is also advisable that those who take the course attend at the same time the lectures on General Hygiene that are arranged for the fourth-year students of the Medical Department. These lectures are given twice a week from February 1 to the end of the session, and cover topics of general sanitary importance, including:

A consideration of the factors concerned in the direct causation of disease, and the manifold conditions of life that indirectly favor the occurrence of disease among individuals, groups of individuals and communities.

A brief sketch of the important transmissible and epidemic diseases, embracing a discussion of their modes of transmission, portals of infection, geographical and seasonal distribution, and the approved methods of prevention.

A consideration of prophylaxis in general, embracing disinfection and disinfectants, protective vaccination and the anti-toxic state, the disposal of the dead after infectious diseases, and quarantine.

The atmosphere, from the chemical, physical and biological standpoints; the air of enclosed spaces; the problems of ventilation and heating; the various pollutions of the atmosphere, such, for instance,

as those from the soil, from industries, from sewers, etc., and their influence on health and disease.

Water—its sanitary significance; the characteristics of waters from various sources and their suitability to domestic needs; the pollutions to which waters from different sources are liable; the biological significance of these pollutions; interpretations of the results of analysis; natural and artificial purification of waters; the relation of water to health and disease.

Sewage—the part taken by the soil and its constituents in the disposal of organic waste; the characteristics of sewage from different sources; the various methods for the disposal of sewage; the influence of sewage disposal upon the health of communities.

## II. ELEMENTARY COURSE IN BACTERIOLOGY.

This course covers the following subjects:

- (1) Apparatus employed—sterilizers, incubators, pressure regulators, thermostats, etc.
- (2) Culture media, methods of preparation, sterilization methods.
- (3) Microscopic characteristics of cultures of bacteria in general and of special forms.
- (4) Methods of obtaining, from mixtures of different bacteria, individual species in pure cultures.
- (5) Microscopic technique. Use and care of instruments, staining from cultures, section cutting, and staining and mounting of tissues.
- (6) Pathogenic bacteria isolation, identification and inoculation.
- (7) Disinfection, thermal and chemical, methods and apparatus, modes of testing efficiency.
- (8) Bacteriological investigation of water
- (9) Bacteriological investigation of air.
- (10) Bacteriological investigation of soil.

This course begins on the first Monday in May and continues eight weeks, five days a week, from 9 A. M. till 12 M.

## III. RESEARCH IN ADVANCED HYGIENE AND BACTERIOLOGY.

Opportunities for research work in Advanced Hygiene and Bacteriology are offered to students having the requisite preliminary training. All work coming under this head is done under the direct supervision of the Laboratory staff.

## FEES AND DEPOSITS.\*

Tuition fees are as follows: For Course I, thirty-five dollars (\$35.00); for Course II, twenty-five dollars (\$25.00); for Course III, twenty-five dollars (\$25.00). For Courses I and II taken in succession with the privileges of the Laboratory and attendance upon lectures on Hygiene, the fee is fifty dollars (\$50.00).

All payments must be made in advance to W. O. Miller, Bursar of the University, Room 102, College Hall.

All students taking courses, or otherwise working in the Laboratories, must make a deposit of ten dollars (\$10.00) in addition to the regular fee, to insure the Laboratory against loss by breakage, etc. All accounts held by the Laboratory against students for breakage, and materials used, will be deducted from the caution deposit, the balance being returned to the student at the end of the course (unless otherwise arranged).

## GENERAL REGULATIONS.

Persons who have had courses in the Laboratory and have demonstrated their capacity for independent work, or those who come from other laboratories with proper recommendations, and who desire to pursue special researches coming within the scope of this Laboratory, can obtain the privilege of working in the Laboratory by the payment of the necessary fee. This does not include attention from the instructors for any definite time, but pays only for the place in which to work. The Laboratory reserves the right to refuse these privileges to any one who is not prepared to pursue independent studies of the proper character. Individuals to whom these privileges are granted must submit to the rules and regulations of the Laboratory. They will make the usual caution deposit and pay the regular prices for materials.

Should the work of an independent student be of such a nature as either to advance the teaching or to contribute to the value of researches being conducted as the property of the Laboratory, the Director may offer to such student the privileges of the Laboratory without the payment of the regular fee, providing the work of the student is placed at the disposal of the Laboratory. Due credit will be given to the student for his work thus utilized.

Only those students who give evidence of fitness to profit by the courses will be received. It is desirable that students should have

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\* See also later pages, under Part V of this Catalogue, "Financial Obligations."

some practical knowledge of chemical manipulation and of the use of the microscope, before applying for places in the Laboratory.

The rules of the Laboratory as to order and discipline must be observed, and the right is reserved to request the withdrawal of any student who may not obey them.

### THE THOMAS A. SCOTT FELLOWSHIP.

Since the opening of the Laboratory this Fellowship was founded and generously endowed by Mrs. Scott as a memorial of the late Thomas A. Scott, Esq., of Philadelphia. Its object is to aid talented students who desire to become investigators or teachers in the field of sanitary science, and to promote the increase of knowledge in that field.

The power of appointment to this Fellowship rests with the Corporation, who will act upon recommendation made to it by the *Electors to the Fellowship*, comprising the Provost of the University, the Chairman of the Committee of the Corporation on the Department of Medicine and Allied Schools, and the Director of the Laboratory.

The salary attached to the position is the annual income arising from \$10,000, the amount of endowment of the Fellowship.

### GENERAL REGULATIONS.

1. Applications should be made in writing to the Provost of the University not later than June 1 of the elapsing year. The academic year begins on the last Friday in September.

2. The holder of the Fellowship shall not be more than thirty years of age at the time of his appointment.

3. The application must be accompanied by evidence of a liberal education, such as the diploma of a college of good repute (the appointment being regarded as an equivalent to the baccalaureate degree). The applicant is required to possess a reading knowledge of French and German, and to have performed practical work in this Laboratory, or to give evidence of the completion of a previous research elsewhere, such as will meet with the approval of the Electors.

4. The holder of the Fellowship will be expected to perform such duties as may be allotted to him by the Director of the Laboratory in connection with his course of study; to act, when called upon, as assistant examiner; to use his influence for the promotion of the

objects and good order of the department; and, in general, to forward the efficiency of the University as far as may be in his power.

5. The primary purpose of the Fellowship is the prosecution, under the direction of the head of the department, of special studies relating to the causation and prevention of disease. Before the close of the year the Fellow is required to demonstrate the progress he has made by presenting a thesis upon the results of his research; by the delivery of special lectures bearing upon the subject of his investigations; or by some similar method that will be satisfactory to the Electors.

6. While holding the Fellowship he will not be permitted to engage in any work other than that directly bearing upon the interests of the department.

7. All work performed is to be considered the property of the Laboratory, and to be published only with the consent and approval of the Director.

8. The Fellow is not called upon to aid in the routine teaching of the Laboratory. He may be requested to deliver a brief course of special lectures upon the subject of his research, providing such lectures would materially aid in the work of the department. While holding the Fellowship he will not be permitted to teach in any other institution or to engage in any work not bearing directly on the University's interest.

9. He may be reappointed at the end of the year, but only for exceptional reasons.

10. The holder is exempt from tuition fees. In case of resignation, promotion or removal from the Fellowship, payments will be made for the time during which the office shall have been actually held.

11. The Electors have the right to declare the Fellowship vacant if the holder prove in their opinion unworthy, and no further salary shall be paid to the person thus removed.

## THE FLOWER ASTRONOMICAL OBSERVATORY.

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CHARLES C. HARRISON, LL. D., PROVOST.

EDGAR F. SMITH, PH. D., Sc. D., LL. D., VICE-PROVOST.

CHARLES L. DOOLITTLE, C. E., Sc. D., *FLOWER Professor of Astronomy, and Director of the Observatory.*

ERIC DOOLITTLE, C. E., *Assistant Professor of Astronomy.*

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The Astronomical Observatory is situated on the "Flower Farm," a gift to the University by the will of the late Reese Wall Flower, about two miles beyond the city limits, on the West Chester Turnpike. The Observatory buildings are three in number, viz.: the equatorial building, of brick; the meridian building of wood; and the residence of the Director: one wing of the latter containing the Astronomical library, the office and computing rooms. The principal instruments comprising the equipment are: an Equatorial of 18-inch aperture, with Spectroscope; a Meridian Circle of 4-inch aperture; a Zenith Telescope of 5½-inch aperture; a 3-inch Universal Transit, and a Reflex Zenith Tube of 8-inch aperture. The latter was a gift of Mr. Joseph Wharton and is known as the Wharton Zenith Tube.

Graduate students in Practical Astronomy are instructed in the details of observatory practice, and participate in the regular work, which includes systematic observation of comets, small planets and double stars, investigation of variation of latitude, and spectroscopy.

The Flower Observatory is open to visitors every Thursday evening, holidays excepted, between the hours of 7 and 10 P. M.

Take elevated line to 69th Street terminal, then change to an Ardmore or West Chester car.

## **DEPARTMENT OF PHYSICAL EDUCATION.**

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### **OFFICERS.**

CHARLES C. HARRISON, LL. D., PROVOST.

EDGAR F. SMITH, PH. D., Sc. D., LL. D., VICE-PROVOST.

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R. TAIT MCKENZIE, B. A., M. D., *Professor of Physical Education, and Director of the Department.*

W. CAMPBELL POSEY, M. D. *Ophthalmologist.*

W. J. CROMIE, *Instructor in Gymnastics.*

J. HOWARD FRICK, *Assistant Instructor in Gymnastics.*

JOSEPH C. BIRDSALL, *Assistant Instructor in Gymnastics.*

ELLIS F. WARD, *Instructor in Rowing.*

MICHAEL C. MURPHY, *Instructor in Track and Field Athletics.*

GEORGE KISTLER, *Instructor in Swimming.*

LEONARDO TERRONE, *Instructor in Fencing.*

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### **ASSISTANTS TO THE OPHTHALMOLOGIST.**

ALFRED CRAMER, M. D., WALTON C. SWINDELLS,

JOHN A. COLGAN, M. D., M. D.,

J. C. KNIPE, M. D., ALBERT L. PILKINGTON,

FRANK C. PARKER, M. D., M. D.

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At a meeting of the Board of Trustees, held in May, 1904, it was resolved that the course in Physical Education be made an integral part of the University curriculum. The following regulations were subsequently adopted and are now in force:

The Gymnasium fee will be collected from all male students of the University, except those of the Graduate School, Evening School of Accounts and Finance, Summer School, those taking special post-graduate work in the Departments of Dentistry and Veterinary Medicine, and those taking Teachers' Courses or the course in Music in the College.

The Bursar's receipt entitles the holder to the use of the Gymnasium, shower-baths, swimming-pool and Franklin Field, except when any or all of them are specially reserved, as, for example, in

the case of intercollegiate games. Due notice of such reservation will be posted on the bulletin boards at the Gymnasium.

Every locker holder is entitled to a physical examination, including his measurements, a strength test, an examination of his heart, lungs, and general condition, with a special examination of his eyes. On the basis of this examination the kind and amount of exercise best adapted to his needs are outlined, and class instruction is given as arranged in the roster at the beginning of the college year.

In the following cases a certain minimum amount of gymnastic or athletic work is required, for which the student receives credit on the basis of laboratory work counting toward his degree. In all other cases the work is optional.

**THE COLLEGE.**—Two periods a week are required in the College, lasting one hour each, of all full students, and of partial and special students as provided by a special form; the work to be graded and made progressive throughout the four years.

**PROFESSIONAL SCHOOLS.**—The same amount is required from members of the first and second year classes in the Department of Medicine, and from members of the first year classes in the Departments of Law, Dentistry, and Veterinary Medicine.

Exceptional cases may be excused from this requirement when approved jointly by the Director of the Department of Physical Education and the Dean of the Department; and also the following cases:

First, all full students who have, in the opinion of the Director of the Department of Physical Education, had an equivalent amount of work at this, or another, university or college.

Second, holders of a *college degree in Arts or Science*.

Third, those having some physical disability.

Membership, and regular attendance at the practice of any of the athletic squads of the University is taken as an equivalent for gymnasium work only while the man is in active training, *the attendance being reported weekly*.

Excuse from the requirement, however, does not in any case waive liability for the payment of the gymnasium fee.

#### FACILITIES AND EQUIPMENT.

I. **THE UNIVERSITY GYMNASIUM**, presented to the Trustees by a committee of the Alumni.

The main exercise hall, 144 by 68 feet, is well lighted by a roof of glass, and has a specially designed system of ventilation, thus ensur-

ing a constant supply of fresh air. The iron-work overhead gives attachment to the heavy apparatus. The equipment is so arranged as to be quickly put in place or hoisted out of the way, leaving a clear floor space for large classes; while the floor can be divided into three equal spaces by nets, so as to permit the playing of games in which balls are used without interfering with other work. A small spectators' gallery occupies each end.

On the same floor are two rooms, one at each end, with 2,008 expanded metal lockers, and space for more, and two small dressing-rooms, with shower-baths, for the members of the Faculty and graduates. On the floor beneath are the towel-rooms and shower-baths. The floor below the exercise hall is occupied by the swimming-pool, the rowing-room, and two boxing, fencing and wrestling-rooms.

The pool, 100 by 30 feet, is supplied by a continuous stream of filtered water, which is completely changed once a week. It is commanded on three sides by a spectators' gallery. All the apparatus for teaching swimming is supplied, and the Instructor or his assistant is always in attendance.

The Rowing-Room, 75 by 30 feet, is used as an accessory gymnasium, with sixteen machines on which the crew do their winter training; and in it are found additional gymnastic apparatus. The two rooms, 30 by 30 feet each, at either end of the Rowing-Room, are fitted with all the appliances for teaching boxing, fencing and wrestling.

The Director's office and examining rooms are situated in the north wing, while the corresponding rooms of the south wing contain the offices and committee rooms of the Athletic Association.

The basement of each wing is taken up by the special Varsity dressing-rooms with 118 lockers, baths, drying-rooms, repair shop and Instructor's rooms.

II. FRANKLIN FIELD, situated to the east of the gymnasium building, and overlooked by it. It is encircled by a  $\frac{1}{4}$ -mile cinder path and has permanent stands of brick on its north, east and south sides, capable of seating 20,000 spectators. Beneath them are the squash courts and an in-door running track. The stands are connected to the north and south wings of the gymnasium building by brick arches, spanning the entrances to the field.

#### INSTRUCTION.

Instruction is given in both the theory and practice of Physical Education.

The theoretical instruction, which is in process of organization,

will include courses offered to students who have had two years of medical training, on the application of Anatomy and Physiology to exercise, and the many questions with which it is allied, such as blood pressure, strain, fatigue and exhaustion. Anthropometry as applied to the laws of growth and development in children, and to the variation in measurements that can be produced by systematic exercise. The tests employed in determining the efficiency of hearing and of sight. Lectures and demonstrations on school hygiene and sanitation. The application of exercise to such conditions as curvature of the spine, locomotor ataxia, disturbances of nutrition, and backward development in its various phases. Students taking this course are given an opportunity for practical experience in instruction by appointment as class leaders in floor work, and assistants in the physical examinations.

The practical work of the department applies to the general student body. A careful medical examination, including a thorough test of the sight, is made of all men coming under the regulations on entering college. A series of measurements is taken, particular stress being laid on those which can be changed by judicious exercise; while tests are made also of the strength of the legs, back and shoulders, chest, arms and forearms. On the basis of the information obtained at this examination the students are divided into three classes according to their physical condition. (a) Those who are below the normal are given special work to remedy or correct such defects as scoliosis, flat-foot, weak chest, round shoulders, etc., which are susceptible to improvement by prescribed gymnastic exercise. (b) For the average man a regular gymnastic course is given, beginning with light free-hand movements, and going forward by easy and progressive steps to the most advanced work on the whole range of gymnastic apparatus. For men who are representing the University on the athletic field, or who are trying for any of the teams or crews, credit is given on the basis of gymnastic work while they are "in training." When not "in training," an equivalent amount of gymnastic work will be required of all who come under the rule for required work.

All candidates for teams or crews must pass a satisfactory medical examination by the Director before being considered eligible to represent the University.

Proficiency in swimming is required of all the candidates for crews, and it will be taught to all students of the first year.

## **DEPARTMENT OF ARCHAEOLOGY.**

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*President:*

S. F. HOUSTON.

*Vice-Presidents:*

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ECKLEY BRINTON COXE, JR.

*Secretary:*

B. FRANKLIN PEPPER.

*Treasurer:*

WILLIAM H. HUTT, JR.

*Assistant Secretary and Treasurer.*

JANE M. McHUGH.

*Curators:*

GEORGE B. GORDON, Sc.D., *Anthropology*.

HERMANN V. HILPRECHT, Ph. D., D. D., LL. D., } *Babylonian and General Semitic*  
PHILIP WOODWARD, } *Section.*

ALBERT T. CLAY, Ph. D.,

WILLIAM N. BATES, Ph. D., *Mediterranean Section*.

DAVID RANDALL-MACIVER, A.M., Sc.D., } *Egyptian Section.*  
C. LEONARD WOOLLEY, A. M.,

**BOARD OF MANAGERS:**

(*Ex-Officio.*)

THE MAYOR OF THE CITY OF PHILADELPHIA.

THE PRESIDENT OF THE SELECT COUNCIL OF THE CITY OF PHILADELPHIA.

THE PRESIDENT OF THE COMMON COUNCIL OF THE CITY OF PHILADELPHIA.

THE PRESIDENT OF THE COMMISSIONERS OF FAIRMOUNT PARK.

CHARLES C. HARRISON, LL. D., Provost, *ex-officio*,  
 JOSEPH S. HARRIS, Sc. D., S. F. HOUSTON,  
 J. LEVERING JONES, ROBERT G. LE CONTE, M. D.

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Term expires January 1, 1909:

GEORGE F. BAER,	ECKLEY BRINTON COXE, JR.,
E. W. CLARK, JR.,	B. FRANKLIN PEPPER.

Term expires January 1, 1910:

J. WARREN COULSTON, JR.,	JAMES HAY,
JACOB S. DISSTON,	CHARLTON YARNALL.

Term expires January 1, 1911:

DANIEL BAUGH,	MARTIN G. BRUMBAUGH,
LOUIS A. BIDDLE,	TALCOTT WILLIAMS.

Term expires January 1, 1912:

JOHN W. CONVERSE,	C. HOWARD CLARK, JR.,
J. LEVERING JONES,	JOHN WANAMAKER,

*Board of Advisory Managers:*

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CHARLES H. CRAMP,	MRS. EFFINGHAM PEROT,
DR. A. L. E. CROUTER,	SILAS W. PETTIT,
SAMUEL A. CROZER,	MRS. CHARLES PLATT, JR.,
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BENJAMIN SMITH LYMAN,	STUART WOOD,
GEORGE W. OCHS,	MRS. J. E. WOODBRIDGE,
W. A. PATTON,	DR. GEORGE WOODWARD.

The MUSEUM OF ARCHAEOLOGY was organized in 1889 to provide for instruction and original research, and for the incidental formation of illustrative collections. In 1891, in consequence of the great interest manifested in this Museum, and the successful

extension of its work, it was constituted a Department of the University.

By ordinance approved March 30, 1894, the city of Philadelphia transferred to the Corporation a tract of eight acres of land in trust, to maintain as a park and botanic garden, and to erect thereon a Free Museum of Science and Art. By ordinance of City Councils, October 29, 1895, an additional piece of ground measuring one and two-sevenths acres was made over by the City to the Corporation upon the same terms as the former grant.

The complete plans for the new Museum call for an extensive group of buildings, so arranged as to be capable of construction by sections. They will cover ultimately almost twelve acres of ground, the total cost being estimated at \$2,250,000. The northwestern section, situated at Thirty-third and Spruce streets, was begun in 1897, and dedicated December 20, 1899. Its cost, including the mechanical plant and the furniture and equipment, was \$389,000. To cover this, \$150,000 was appropriated by the State and \$239,000 was subscribed by individuals. In 1899 the transfer of the collections from the Library to the new building was accomplished, and the Museum was opened to the public.

The Museum is divided into four sections, each one of which is in charge of a curator.

The American Section contains a number of fine exhibits illustrating the customs, arts and industries of the great historic tribes as well as those pertaining to the ancient peoples of the two continents. Among the former, the extensive Indian collections from the southwestern, western and northwestern parts of the United States, and from Alaska, deserve special mention. An attractive feature of this section is a large collection of Indian basketry containing specimens of every variety of weave and design in use among the tribes of the continent.

The ancient peoples of America are represented by many articles of pottery and of stone from the ancient earthworks of the central region of the United States, by the collection excavated by the late Frank Hamilton Cushing on the Southwest Coast of Florida, by pottery from the ruined pueblos of New Mexico and Arizona, and by an exhibit of antiquities from the ancient cliff dwellers of Colorado. From Mexico and Central America the section is supplied with casts of some of the great carved monoliths of Copan and Quirigua, and with pottery and stone objects from the prehistoric graves of that region. Turning to South America, the section contains a very extensive collection of pottery, textiles, and numerous

articles of use and adornment, obtained by Dr. Max Uhle in Peru and Bolivia. The greater part of this collection was excavated by Dr. Uhle on the site of the ancient coast city of Pachacamac, one of the most important places of old Peru.

The BRINTON LIBRARY of Americana (containing, among many rich collections of aboriginal literature, the Berendt MSS., which include all the extant remnants of Maya literature), affords unequalled advantages to the student of American Archaeology and Ethnology.

The Ethnological Collections from countries other than America occupy four halls, two of which are devoted to the collections from Borneo, Sumatra, the Philippines, the Caroline Islands, the Naga Hill tribes of Assam, the Ainos of Japan, the Polynesian and Melanesian groups, West Africa and Morocco. Notable features of this section are collections of musical instruments, fans, the Sommerville collection of objects pertaining to Buddhist worship, and a comprehensive collection of coins.

The Babylonian and General Semitic Section contains a large and extremely valuable collection of antiquities, the greater portion of which is the result of extensive excavations conducted by the University at the ruins of Nippur in Central Babylonia. Much time and labor have been expended in a thorough exploration of the principal mounds of these ruins, including the temple of Bēl, presumably the oldest sanctuary in Babylonia. Among the most important objects secured through the excavations may be mentioned about fifty thousand cuneiform documents in clay, including the literary and scientific remains of the Temple Library. There are hundreds of terra-cotta and glass vases; Hebrew, Mandaic and Syriac bowls; about 700 fragments of the most ancient inscribed stones, vases, and votive tablets; nearly 600 seal-cylinders; clay coffins; a large amount of gold and silver jewelry, and other objects of art—all serving to illustrate the life and customs of the ancient inhabitants of Mesopotamia, and of the Semites in general.

The Egyptian Section contains important collections illustrating the arts and industries of Egypt from prehistoric times to the fifth century A. D.

The predynastic series in stone, pottery and ivory from Ballas and Naqada, together with the objects in wood, ivory and stone inscribed with the names of the first kings of Egypt found in the Royal Tombs at Abydos, form one of the most valuable collections extant for the study of this early period. The Twelfth Dynasty collection is thoroughly representative and contains particularly interesting tomb-groups with gold and silver jewelry, necklaces of glaze and

precious stones and stone vases. The New Empire collection has some good specimens of the period when artistic technique reached so high a level, and includes fine sculptured and inscribed stones from Tel el Amarna illustrating the revolution which took place in religion and in art under Akh en Aten, the mystic Pharaoh of the Eighteenth Dynasty.

The Coxe Expeditions sent out to Nubia on behalf of the University have already enriched the Museum with fine stelae of the Twentieth Dynasty from the brick pyramid tombs at Anibeh, and with the contents of a Nubian fortress of the time of Thothmes III, and a Nubian cemetery at Shablul of Roman date. From a similar Romano-Nubian cemetery excavated at Anibeh in 1907-08 there is exhibited a very large and unique collection of the utmost value representing the local Nubian civilization which was unknown before to archaeology. It contains a number of Meroitic inscriptions, statues and portrait heads in sandstone, bronze vessels and caskets of wood inlaid with ivory (which may rank as the most precious examples that the world possesses of the art of this period), beads, Roman glass, engraved finger rings and hundreds of finely painted vases.

The collection of papyri contains manuscripts in Demotic and Greek including several fragments of very well known classical historians and poets.

The Mediterranean collection comprises an important series of Greek, Cypriote, Etruscan, and Roman antiquities.

The contents of some Etruscan tombs at Narce, Chiusi, Cervetri, Vulci, Bientium, Ascoli, Civita-Castellana, Orvieto, Corneto and Tarentum. Etruscan sarcophagi of stone from Civita-Musarna, near Viterbo, the Dillwyn Parrish Collection of fragments of ancient mosaics from Carthage and Rome, marbles from the site of a temple of Diana Arecina, near Lake Nemi, and from other Italian sites, a collection of pottery, stone and bronze objects from prehistoric sites in Crete are worthy of special mention. Replicas of bronzes from Pompeii and Herculaneum in the Naples Museum and casts of the great bas-reliefs of Trajan's Arch at Beneventum add to the educational value of the collections.

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The collections are open to visitors daily during the academic year, Christmas, New Year's Day and Good Friday excepted, from 10 A. M. to 5 P. M. On Sundays, they are open from 2 P. M. to 6 P. M.

For the prosecution of special studies in the Museum, application should be made to the Curators in charge of the several Sections.

## **PART IV**

### **STANDING COMMITTEES**



## **GRADUATES' APPOINTMENT COMMITTEE.**

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**EDGAR F. SMITH, PH. D., Sc. D., LL. D., VICE-PROVOST, and Professor of Chemistry: *Chairman.***

**HENRY W. SPANGLER, M. S., Sc. D., Professor of Dynamical Engineering.**

**JOSIAH H. PENNIMAN, PH. D., LL. D., Dean and Professor of English Literature.**

**JOHN C. ROLFE, PH. D., Professor of the Latin Language and Literature.**

**HERMAN V. AMES, PH. D., Dean and Professor of American Constitutional History.**

**EDWARD ROBINS, Assistant Secretary of the University: *Secretary.***

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The University maintains a Graduates' Appointment Committee, through the medium of which graduates and other members of the University seeking positions are brought into contact with persons having vacancies to fill, in the line of teaching or tutoring.

Applicants for positions may register their names with the Committee, and fill out blank forms with detailed information as to personal history and qualifications, kind of work desired, etc. The Committee keeps these records on file together with classified lists of schools, colleges or individuals desirous of filling vacancies, and thus endeavors to bring applicants into touch, either in person or by letter, with possible employers. The Committee does not guarantee positions to those who may apply, but acts merely as an intermediary by conducting all necessary correspondence, and by assuming all expenses incidental to the case. No fees of any kind are charged, but no assistance is given to applicants who are not members of the University.

While the primary purpose of the Committee is to secure positions for those who have none in prospect, it is glad to register also the applications of graduates who already have employment as teachers but who may wish to consider a change to other fields.

Further information as to scope and methods, and blanks for registration, may be obtained from the Assistant Secretary of the University, College Hall.

#### STUDENT SELF-SUPPORT.

In addition to the Committee mentioned above, a students' Employment Bureau is affiliated with the Houston Club of the University. While this Bureau does not undertake to guarantee work to students, it gives every candidate for assistance advice and suggestion of value, and seldom fails to find opportunities for deserving and capable men to increase their income. Much depends, however, on the student's hours of leisure, his aptitude, experience, power of endurance, and individual initiative. A few of the numerous sources of income are: Teaching in night schools, office work, translating, nursing, singing, typewriting, stenography, reporting and advertising.

Engineering, Medical and Veterinary students will find their time for work somewhat limited by the exacting demands of laboratory and lectures; they are, therefore, not encouraged to assume such additional responsibilities as may interfere with their University duties.

It is important that all prospective students be prepared to meet at least the expenses of their first half year. These will usually amount to about \$200, although a smaller sum will often suffice holders of scholarships.

Students who desire employment should register their names, with a statement of their qualifications. Upon request, blanks for this purpose and a pamphlet containing suggestions to self-supporting students will be furnished.

Address all communications to the Director of this Bureau, Mr. A. P. Clime, Houston Hall.

## UNIVERSITY PUBLICATIONS AND UNIVERSITY PUBLICATION COMMITTEE.

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CLARENCE G. CHILD, PH. D., L. H. D., Professor of English,  
*Chairman.*

JOSEPH G. ROSENGARTEN, LL. D., Trustee.

MORTON W. EASTON, PH. D., Professor of Comparative Philology.

FELIX E. SCHELLING, PH. D., LITT. D., Professor of English.

MORRIS JASTROW, Jr., PH. D., Librarian.

ARTHUR W. GOODSPEED, PH. D., Professor of Physics.

EDWARD P. CHEYNEY, A. M., Professor of History.

EMORY R. JOHNSON, PH. D., Professor of Transportation and Commerce.

EDWARD ROBINS, Assistant Secretary of the University: *Secretary.*

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### *Group I.—Annual Publications.*

#### **University Catalogue.**

Fasciculi of the College, the Graduate School, and of the departments of Law, Medicine, Dentistry and Veterinary Medicine.  
Report of the Provost.

### *\*Group II.—Serial Publications.*

Series in Philology and Literature.

Series in Romanic Languages and Literatures.

Series in Philosophy.

Series in Political Economy and Public Law.

Series in Astronomy.

Series in History.

Contributions from the Botanical Laboratory.

Contributions from the Zoological Laboratory.

Contributions from the Department of Mathematics.

Contributions from the Laboratory of Hygiene.

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\* For equivalent exchange *only*, or for sale.

*Group III.—Publications from University Institutes.*  
Publications issued by the Wistar Institute.

*Group IV.—Occasional Publications.*  
Theses presented for the Degree of Doctor of Philosophy.

*\*Group V.—Affiliated Publications.*

Annals of the American Academy of Political and Social Science.  
Translations and Reprints from the Original Sources of European  
History (occasional).  
American Law Register (monthly).  
University Medical Magazine (monthly).  
Proceedings of the Department of Archaeology (occasional).  
Contributions from the William Pepper Laboratory of Clinical  
Medicine (annually).  
Contributions from the Laboratory of Neuro-pathology (annually).  
Psychological Clinic (monthly).

#### DESCRIPTION OF GROUPS

*Group I* consists of publications issued annually under the direct auspices of the Provost and Trustees.

The University Catalogue contains detailed information concerning all departments, lists of officers and students with addresses, etc. It is sent without charge to alumni of the University (upon request), to libraries, to educational and other learned institutions, and to persons interested in the work of the University as a whole.

The Fasciculus of each department contains information concerning that department *only*, while the circular of information covering the several courses offered in the college is in like manner restricted as to its contents. Copies are mailed on request.

The Report of the Provost, made by him annually to the Corporation, constitutes a general review of University activities during the year, and contains *inter alia* reports from the Treasurer and the several Deans. Single copies are mailed upon request.

*Group II* consists of publications in the several fields of literature, science and philology. They are issued in separate series at irregular intervals (for the most part), and represent the results of original research by, or under the direction of, members of the staff of instruction of the University. Descriptive circulars will be mailed

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\* For equivalent exchange *only*, or for sale.

free upon request. *Group II* is published under the editorial supervision of the University Publication Committee.

*Group III* consists of the following publications issued by the Wistar Institute: *Journal of Morphology*, *The Journal of Comparative Neurology and Psychology*, *The American Journal of Anatomy*, *The Anatomical Record* and *The Journal of Experimental Zoölogy*.

*Group IV* consists of theses presented in partial fulfillment of the requirements for the Degree of Doctor of Philosophy.

*Group V* consists of affiliated publications, issued as separate periodicals, not under the control of the University, but edited in part by officers of the University of Pennsylvania.

#### EXCHANGE BUREAU.

In connection with its publications, the University maintains an Exchange Bureau. Through the medium of this Bureau, the publications noted under the various group headings are distributed to over two hundred home and foreign universities and learned societies, which, in exchange, forward to the University Library publications embodying the results of original research, etc., issued under their several auspices. Much valuable material is thus added to the shelves of the Library, while the exchange system enables the University to extend its own sphere of usefulness, and at the same time to come into closer contact with the best centers of educational activity both at home and abroad.

All correspondence relating to the publications of the University, or to the management of the Exchange Bureau, should be addressed to the Assistant Secretary of the University of Pennsylvania.

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#### MISCELLANEOUS PUBLICATIONS.

In addition to the foregoing, mention may be made of the following publications managed and edited by the students: *The Pennsylvanian*, a daily newspaper; *The Red and Blue*, a literary monthly; *The Punch Bowl*, a comic monthly; *The Penn Dental Journal*, issued four times during the session by the students in the Department of Dentistry; and *The Record*, an annual, issued in June by the Graduating Class of the College.

*Old Penn*, a weekly review of current activities, and containing an official calendar of daily events, is issued under University auspices. *The Alumni Register* is published by the General Alumni Society, as the organ of the affiliated departmental alumni societies.

## **UNIVERSITY COMMITTEE ON ATHLETICS.**

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**EDGAR F. SMITH, Ph. D., Sc. D., LL. D., VICE-PROVOST: Professor of Chemistry: *Chairman.***

(On the part of the College Faculty.)

**ARTHUR W. GOODSPEED, Ph. D., Professor of Physics: *Secretary.***

(On the part of the Graduate School.)

**FRANCIS H. BOHLEN, LL. B., Professor of Law.**

(On the part of the Faculty of Law.)

**J. WILLIAM WHITE, M. D., LL. D., Professor of Surgery.**

(On the part of the Faculty of Medicine.)

**MATTHEW H. CRYER, M. D., D. D. S., Professor of Oral Surgery.**

(On the part of the Faculty of Dentistry.)

**JOHN W. ADAMS, A. B., V. M. D., Professor of Veterinary Medicine**

(On the part of the Faculty of Veterinary Medicine.)

**ARTHUR L. CHURCH,**

**SAMUEL F. HOUSTON.**

(On the part of the Corporation.)

**H. LAUSSAT GEYELIN,**

**CHARLES S. W. PACKARD.**

(On the part of the Athletic Association.)

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(On the part of the Undergraduates.)

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The ultimate control of the athletic sports of students is in the hands of the University Committee on Athletics.

This committee was created by action of the Corporation and consists of the chairmen of the several committees on athletics in the College, the Graduate School, Law, Medical, Dental and

Veterinary Schools, together with two representatives each from the Corporation, from the Athletic Association, and from the student body. This committee is charged with the oversight of the physical life of the students of the University; controls all athletic sports, contests and exhibitions, both interclass and intercollegiate; determines, through the reports of the Deans of the several faculties, the eligibility (in point of scholarship) of students who may desire to serve on any athletic teams; and has jurisdiction over other kindred matters.

## UNIVERSITY COMMITTEE ON NON-ATHLETIC ORGANIZATIONS.

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WILLIAM E. LINGELBACH, PH. D., Professor of European History.

(On the part of the College Faculty.)

WALTON B. McDANIEL, A. M., PH. D., Assistant Professor of Classical Philology.

(On the part of the Faculty of the Graduate School.)

WILLIAM E. MIKELL, B.S., Professor of Law.

(On the part of the Faculty of Law.)

EDWARD LODHOLZ, M. D., Assistant Professor of Veterinary Physiology.

(On the part of the Faculty of Medicine.)

JAMES TRUMAN, D. D. S., LL. D., Professor of Dental Pathology, Therapeutics and Materia Medica.

(On the part of the Faculty of Dentistry.)

SIMON J. J. HARGER, V. M. D., Professor of Veterinary Anatomy and Zoötechnics.

(On the part of the Faculty of Veterinary Medicine.)

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1. Students desiring to establish newspapers, magazines, dramatic and musical societies, and other organizations that may bring them in relation with the public, must submit a draft of their proposed undertaking to the Committee on Non-Athletic Organizations, together with a list of men interested therein. If the proposed organization be approved by the Committee, a certificate of approval will be given to the promoters of the project. Without a certificate, no such organizations may be formed by the students.

2. All organizations referred to in Section 1, whether old or new, must submit to the Committee within thirty days from the commencement of each college year, a list of their officers, with their respective city residences, and must report to the Committee all changes that may occur during the year.

3. All students taking part in such organizations as are referred to in Section 1 must be in good standing. No student will be allowed to take part in such organizations if he has more than one condition. Special and partial students shall not be eligible unless taking regularly an amount of work equivalent to the minimum required of regular students under usual conditions.

## **PART V**

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### **FINANCIAL OBLIGATIONS AND DORMITORIES**



## **FINANCIAL OBLIGATIONS AND DORMITORIES.**

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### **RULES GOVERNING PAYMENTS.**

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#### **I. CHARGES AND DEPOSITS.**

1. **MATRICULATION FEES:** In the department where a matriculation fee is charged, that fee shall be paid by all new students in the department, whether previously registered in another department or not.

2. **DEPOSITS:** Every student shall, upon entering the University, make a deposit of at least \$5.00 to cover loss, damage, or breakage of University property, library fines, or any charge not paid by the student in some other way. A student whose deposit is by charges against it reduced to one-half its original amount or less, shall be required to pay a sum sufficient to restore the deposit to the original amount. A student entering another class or department shall make up his deposit to the amount required in that class or department, if the amount be larger, or may reduce his deposit if the amount be smaller. No deposit or balance remaining on a deposit shall be finally repaid to a student until he shall have been graduated, or shall have formally withdrawn from the University.

3. Every student, before beginning the work of any given academic year, must register at the office of the Dean of his department and receive a "charge card," which shall be presented without delay to the Bursar. If a student fail to deposit the card with the Bursar within ten days, the Dean shall notify him that his name has been dropped from the rolls. To be reinstated he must then register again. By the date of registration in these rules shall be meant the date stamped by the department office on the charge card and the matriculation card attached thereto.

#### **II. ALLOWANCES AND REGULATIONS.**

1. **WITHDRAWALS:** A student who withdraws within one week of the date on which he registered may receive a return of the full amount of the tuition paid, but in no case will the matriculation fee be returned.

A student who leaves the University for any cause, after the first week and within thirty days from the beginning of either the first or second term, will be required to pay one-half of the term's tuition fees.

A student who, on account of illness or other physical disability, withdraws during the term will be required to pay a fee the amount of which shall be such proportionate part of the entire tuition fee as the number of weeks of his attendance bears to the number of weeks in the academic session, provided such proportionate part be not less than one-half of the term's tuition fees.

A student who withdraws after November 1, or March 1, of any year, for causes other than illness or physical disability, will be required to pay the full term's fee.

If a student shall have paid before withdrawal a greater amount than required by these rules, the excess paid will be returned to him.

2. REPEATING A YEAR: A student who repeats his year will be required to pay the full tuition fee.

3.\* SPECIAL STUDENTS: Special students in any department will pay the full tuition fee of regular students in that department.

4. CHANGING COURSES: A student who is transferred during the year from one department to another shall pay in each department a fee proportionate to the length of attendance.

5. LATE REGISTRATION AND ABSENCE: Neither late registration nor absence during the term shall entitle the student to a reduction in fees, except where the student signifies in writing his intention not to take examinations or claim credit for the term's work. But a student registering in the Graduate School after November 1 shall be charged a fee proportionate to the period of attendance, unless full credit is allowed.

### III. DUE DATES.

1. CHARGES PAYABLE IN TWO EQUAL PARTS: Annual tuition and laboratory fees, dormitory rents, and other University fees, except as otherwise provided in these rules, are due and payable in two equal parts, on October 1 and February 1, respectively.

2. CHARGES FOR SPECIAL COURSES: The Dean may fix October 1 as the date when the entire fees become due for a special course or a course which is to be completed by February 1.

3. DORMITORY RENTS AND CHARGES: Rents are due one-half on

\* This regulation does not apply to Partial Course students, who in some departments are designated as "Special Students."

October 1 and one-half on February 1. If the lease is signed after October 1, the first half of the rent is due when the lease is signed, and the second half is due February 1. If signed after February 1, the entire rent is due when the lease is signed. Charges are due as they are incurred.

4. GRADUATION FEES: Graduation and certificate fees shall be due May 15.

#### IV. CONSEQUENCE OF DEFAULT IN PAYMENT.

1. FAILURE TO PAY WITHIN ONE MONTH: Any fee or other University charge not paid in full within one month from the time of the falling due of the charge shall be increased by three per cent of its full amount; the month shall be held to expire at 5 p. m. of the thirty-first day after the charge falls due, the day the charge falls due being counted as the first day. If the thirty-first day shall fall on Sunday or a legal or University holiday, the payment shall be made in full by 5 p. m. the following day. When money to pay fees or other charges is sent through the mails or otherwise *before*, but delivered *after*, the expiration of the time limit set by this rule, the payment shall be regarded as not made within that limit, and the addition of three per cent shall be made to such fees or charges. As far as possible, bills shall be sent for fees, rents, and other charges, within ten days after the time when they become due; but failure to receive a bill will in no case excuse the student or tenant from the obligation to pay the additional charge of three per cent if payment be not made within the time limit set by the rule. Fees for dissection, or for materials to be furnished to students in the laboratories, are not subject to the additional charge stated above.

2. FAILURE TO PAY WITHIN TWO MONTHS: If a student fail to pay his tuition fee in full, together with the increase of three per cent above noted, within two months (62 days) of the falling due of said fee, the Bursar shall notify the Dean of the department in which the student is registered, and the Dean shall notify such student that he is suspended and excluded from lectures, recitations, practical work, and examinations until payment in full be made. Fees for dissection and materials are not subject to this rule, but laboratory fees in the Graduate School are subject to it.

If a student after being suspended for non-payment shall fail to settle his account by Commencement Day, the Dean shall at that time record him as dropped for non-payment of fees.

3. FAILURE TO PAY RENT WITHIN THREE MONTHS: If a student fail to pay his rent or dormitory charges within three months of the date when due, he may be required to vacate his room.

4. **RIGHT TO AN EXAMINATION:** No student shall be admitted to examination or receive credit for work done until all tuition fees and department charges are paid, irrespective of whether such charge or any part thereof fell due two months before such examination or not.

5. **RIGHT TO RE-REGISTER:** No student may register for a new year so long as he has tuition fees, dormitory rent, or other University charges overdue and unpaid, nor may any person sign a new lease for a dormitory room so long as he owes rent or charges.

6. **RIGHT TO WITHDRAW OR GRADUATE:** No one shall be granted a certificate of withdrawal or be graduated who has not paid in full all his financial obligations to the University.

#### V. LATE REGISTRATION.

1. **DATES WHEN FEES ARE DUE:** If a student register after October 1, the first half of his fees for the year will be considered as due October 1. If he register on or after February 1, his fees will be considered as due February 1.

2. **FAILURE TO PAY IN ONE MONTH:** The additional charge provided in Section IV, Rule 1, will be incurred in every case where payment for any reason is delayed beyond one month (31 days), the day of registration being counted as the first day.

3. **FAILURE TO PAY IN TWO MONTHS:** The fees of a student registered late being (by Rule 1 of this Section) due on October 1 and February 1, he is subject to the provision of Section IV, Rule 2, suspending him from all classwork, if payment be not made within two months (62 days) of those dates. If registered on or after the sixty-second day, therefore, his fees must be paid when he registers.

#### VI. PAYMENTS—CASHING STUDENTS' DRAFTS.

Payments due the University must be made in cash, or by certified cheque, bank draft, or postal money order, drawn for the exact amount due.

As an accommodation to students, the Bursar will cash at his office, 102 College Hall, bank drafts on Philadelphia or New York and postal money orders, for not more than \$150.00.

It should be especially noted that no change can be given on cheques presented for fees, rents, etc. *Change will be given on bank drafts and postal money orders only.*

**DORMITORIES.**

The dormitory buildings are in one continuous group surrounding two open courts. The most recent buildings are on one side of what will in time be a third enclosed court. Lists of vacant rooms, prices and other information will be furnished by the Bursar of the University, Room 102, College Hall.

Rooms are of five classes, viz.: *triple suites*, consisting of bedrooms and study for three students; *double suites*, consisting each of two bedrooms and one study, for two students; *single suites*, consisting each of one study and one bedroom for one student; *double rooms*, which are large single apartments furnished for two students; and *single rooms*, of various sizes, each furnished for one student.

All rooms and halls are heated by steam and lighted by electricity. The buildings are on the "separate staircase" system, all doors opening into the courts. On every staircase, and (in nearly all the houses) on each floor, are lavatories, with hot and cold shower-baths, etc. Almost all the suites and double rooms, and many of the single rooms, have open fireplaces. The University supplies for each student the following furniture: a single bedstead, mattress, bureau, washstand, table, bookcase, chairs and toilet china.

Dormitory rooms may be engaged by present students in any department of the University, or by those intending to be students during the year 1909-1910, upon either of the following conditions:

(a) By paying in advance the full year's rental for the room desired, plus a deposit of ten dollars (\$10.00) to cover possible damage, any balance remaining to be returned when the room is finally given up.

(b) By filing with the application for a room a bond securing the full amount of the rent and charges; the printed form for the bond may be had upon application to the Bursar. When two students wish to occupy a room together, each must file a bond. The bond must be signed by two responsible property owners, of whom one must be a citizen of the United States. No student or officer of the University will be accepted as bondsman. The bond may not be signed by a married woman whose husband is living, and it is preferred that both sureties should be men.

Every student not previously a resident in the dormitories who files a bond with his application shall be required upon the signing of his lease to pay ten dollars (\$10.00). Twenty dollars (\$20.00) shall be paid by a student who alone leases a double room or double suite. This payment shall apply as a part payment on the first term's rent. In case the lessee desires to give up his room on

or before October 1, 1909, he may do so by notifying the Bursar in writing, and the bondsmen shall thereupon be released from further liability for the rental of the room, but the payment made at the signing of the lease shall be forfeited. A similar forfeit shall be deducted when a student who had engaged his room by making the full payment of rental and deposit in advance, as specified above, desires to give up his room. The balance due shall thereupon be returned to him.

Rents are payable in advance in two equal instalments, due October 1 and February 1, respectively. To rents or other charges not paid within thirty-one days 3 per cent of the full charge is added. *No exception to this rule can be made on account of failure to receive a bill.* Rents and charges must in any case be paid within three months of the time when they become due. Failure to make payments within the prescribed time may result in the cancellation of the lease.

Although no preference in the assignment of rooms is given on account of length of residence at the University or in the dormitories, or on account of membership in any particular department of the University, present occupants of rooms, who intend to be matriculated as students in some department of the University during the academic year 1909-1910, may engage their present rooms for that year by signing new room agreements. These must be filed with the Bursar not later than April 5, 1909. No student may apply for a room for 1909-1910 if the rent or charges for the year 1908-1909 remain unpaid. A room may not be leased in the spring by the present occupant, held until the fall, and transferred at that time to another student. If the room is to be re-assigned, it must be offered first to those on the "waiting list" for dormitory rooms at that time.

Other rooms for 1909-1910 will be assigned by lot. A list of the rooms to be assigned will be ready for distribution on April 12, 1909. Applications from present students of the University in any department, or from those intending to be students during the year 1909-1910, will be received until noon on May 3, 1909. Assignments will be made by lot. When the name of an applicant is drawn the *first* number on his list will, if possible, be assigned to him. But if that is already taken, the *second* number on his list will be assigned, if possible, and so on. No room will be assigned unless clearly covered by the application.

Assignments will be announced on May 10. Leases must be signed and the initial payment mentioned above must be made by May 17, 1909. A student not yet matriculated must file with his application a certificate signed by two teachers stating that

he is prepared and intends to enter the University. If he has already filed such a certificate as part of his credentials for admission to the University, he should mention that fact in his dormitory application, stating to whom the certificate was sent.

Any rooms remaining unassigned on May 10 will be assigned in the order in which applications are received. When all the rooms have been assigned the Bursar will receive applications for places on the "waiting list." Rooms thrown open for re-assignment will be offered first to those on this list. All tenants must complete registration and show matriculation cards for the year 1909-1910 at the dormitory office by October 6, 1909. Attention is called to the following regulation of the Board of Deans with regard to the occupation of dormitory rooms by special and partial students:

"Except by special permission of the Provost, no special or partial student may be assigned to a room in the dormitories unless he is taking in the University 50 per cent of the number of hours a week required of regular students in the department in which he is registered. When, however, the number of hours a week required of regular students in the department varies as between two or more classes, the hours required of a special or partial student to entitle him to be assigned to a room will be calculated upon the basis of hours required of regular students in that class in his department which is required to take the greatest number of hours a week. Regular students in the Graduate School who are not 'in residence,' in the sense of that term as defined in the rules of the department, are considered as falling within the class of 'special and partial students' as regards dormitory rooms."

"A student who holds a dormitory room loses his right to such room (1) when he ceases to be a student in any department of the University; (2) when he seriously infringes the rules regulating his conduct in the dormitories; (3) when, being a regular student, he becomes a special or partial student taking less than the number of hours required of such students as stated above; or when, being a special or partial student, he ceases to take the number of hours required of such students as above stated; and, (4) when he or his room-mate ceases to occupy the room regularly."

In the assignment of a suite or double room, preference will be given to an application signed by two students who will use the room together. Two students wishing to apply for a room together should both sign an application for the room; such an application will be given two chances in the allotment, and any room drawn will be assigned to both the applicants. The University, however,

reserves the right to cancel any assignment of a room if it is not duly claimed and occupied throughout the year by the student or students signing the application. Suspension or expulsion from the University, or serious infringement of the rules, will be considered sufficient grounds for the cancellation by the University of any lease. Sub-letting or exchange of rooms is not permitted. Voluntary withdrawal from the University does not of itself cancel a lease. The student who wishes to withdraw after October 1, 1909, should apply to the Bursar for the terms upon which his lease may be cancelled. The tenant is held for the full year's rent and charges; but when the room is vacated before the end of the college year, the bondsmen shall not be held responsible for the rent of the room for the rest of the year if the room is rented to another tenant.

If one of two room-mates is expelled or suspended, or so infringes University rules as to make his removal from the dormitories necessary, the other room-mate may have the room assigned to him by immediately signing a new application; provided that there are not two other students applying together for the room. Or he may hold the room by taking another room-mate, who must be qualified by filing an application and bond. If he fails to hold the room in one of these two ways the University may, after giving him notice, require him to vacate the room.

Rentals are for the full college year: that is, from the Saturday before the opening of the University to the Saturday after Commencement Day, inclusive. Occupancy of rooms during any time not included within the regular lease must be paid for as an extra charge. Rents include heat and all reasonable care of rooms, and also light, except in the Memorial Tower, Bodine, Robert Morris, Edgar F. Smith, John Morgan, James Wilson, Eckley B. Coxe, Rodney, Bishop White, House 25, and Mask and Wig houses, in which the rooms are supplied with meters, tenants being charged according to the amount of light used. Additional service in the care of rooms must be paid for as an extra, and must, in all cases, be performed by persons authorized by the University. Cooking of food in the rooms is strictly prohibited.

The Parietal Committee, appointed by the Trustees to have charge of the discipline of the dormitories, consists of the five Proctors, resident in the dormitories, and one other person, appointed by the Provost. The students in each house of the dormitories elect one of their number as a Representative, and these Representatives form a Board which meets regularly and acts with the Parietal Committee in matters concerning the order and comfort of those in the houses.

## **PART VI**

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**DEGREES, HONORS AND PRIZES—1908**



## **DEGREES, HONORS AND PRIZES, 1908.**

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In University Council, Saturday, February 22, 1908:

### **HONORARY DEGREES.**

*Doctor of Laws.*—CECILIA BUAUX.

GROVE KARL GILBERT.

CHARLES EDMUND RICE.

EDWIN SYDNEY STUART.

JOSEPH HODGES CHOATE.

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At Commencement, Wednesday, June 17, 1908:

### **HONORARY DEGREES.**

*Doctor of Letters.*—LLOYD MIFFLIN (*in absentia*).

*Doctor of Science.*—EDWIN GRANT CONKLIN.

HENRY CADWALADER CHAPMAN.

*Doctor of Sacred Theology.*—JAMES ALAN MONTGOMERY.

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At Commencement, Wednesday, June 17, 1908:

### **DEGREES IN COURSE.**

#### *Bachelor of Arts:*

Martin Hays Bickham,	William Downey Long,
William Taylor Caldwell,	Robert Barnes McKay,
Hamilton Disston,	Charles Angelo Moore,
John Noble Doberstine,	Frederick Epenetus Platt,
Alexander Fleisher,	Julius Joseph Price,
Carl Gustave Frederick Franzén,	Thomas Asbury Ratliff,
Stephen Kirk Gillam,	John Franklin Reeves,
Garton Spence Greene,	Francis Berry Snyder,
Norman Woolston Harker,	Pauline Wolcott Spencer,
Harry Cleveland Harris,	Frank William Sterrett,
Barry Hayes Hepburn,	Thomas George Stockhausen,
Ruckman Lee,	George Wanger,
Robert Morton Lewis, Jr.,	Walter Rhoads White,
	George Shaffer Wood.

*Bachelor of Science:*

John William Baker,  
 Joseph Hudson Barker,  
 John Clemmer Bechtel,  
 John Ewart Gladstone Bryant,  
 Edward Costello,  
 Zeta Berenice Cundey,  
 John Shipley Dixon,  
 Engelhardt August Eckhardt,  
 Samuel Weiller Fernberger,  
 Maurice Tracy Fleisher,  
 Howard Wells Fulweiler,  
 Byron Heazelton Goff,  
 Berthold Henry Goldsmith,  
 Charles Hayden Griffiths,  
 Roy Addison Helton,  
 Herbert Dwight Holcombe,  
 James Burnette Holland,  
 William McKean White.

Rutherford Lewis John,  
 Lindley Johnson, Jr.,  
 Edmund Mark Keely, Jr.,  
 James Flavian Lavery,  
 Edward William McCloskey,  
 Joseph Peter Mack,  
 Douglas Macfarlan,  
 Julius Ernest Nachod,  
 Frank Albert Paul,  
 Edmund Hoffman Reeves,  
 Abram Walter Smith,  
 Hoxie Harrison Smith,  
 Clarence Morton Snyder,  
 Joseph Brevitt Townsend, 3d,  
 John Betley Tuttle,  
 John Linck Ulrich,  
 Cornelius J. Walter,

*Bachelor of Science in Architecture:*

Roy Donald Bassette,  
 Harold Bryant Cody,  
 Beaver Wade Day,  
 James Hutchinson Forsythe,  
 Gerald Anderson Holmes,  
 George Hyde Hulin,  
 William Ward Watkin.

J. Carroll Johnson,  
 Roy Childs Jones,  
 Sydney Errington Martin,  
 Harry Paul Rinehart, Jr.,  
 Harvey Arthur Schwab,  
 Stanley Lincoln Sellers,

*Bachelor of Science in Biology:*

Ethel Chodowski,  
 Fanny Polano Feinberg,  
 Bessie Graham Hanley,  
 Dena D. Ungemach.

Bayard Henry Long,  
 Mantie Montgomery,  
 Damaso Rivas,

*Bachelor of Science in Chemistry:*

Allen Thomas Baldwin,  
 Courtney Conover,  
 James Kitchenman Coyne,  
 William Helwig Doering,  
 Elmer Ellsworth Eakins, 2d,  
 Clarence Wignall Rodman.

George Gifford Eysenbach,  
 Jacob Samuel Goldbaum,  
 Henry Kerr Hartzell, Jr.,  
 John Hughes Müller,  
 Christopher Loflin Peirson,

*Bachelor of Science in Chemical Engineering:*

Waldron Cheyney Beekley,  
 John Clifford Evans,  
 Horace West Fairlamb, Jr.,  
 Eugene Granville Grab,  
 Leonard Mulford Taylor.

Harry Heller,  
 Alfred Tennyson Kreimer,  
 Clemens Albert Laise,  
 Lionel Faraday Levy,

*Bachelor of Science in Civil Engineering:*

Julius Adler,  
 Andrew Kirk Armstrong,  
 Samuel Wickes Barakat,  
 Walter Earle Brown,  
 Carl Antoine Christiani,  
 Henry Saulnier Darlington,  
 Harvey Conquest Dever,  
 Howard Doriss,  
 Newbold Drayton,  
 Charles Dickey Dyer, Jr.,  
 Lloyd Tilghman Emory,  
 James Anthony Fitzpatrick,  
 Alexander Foster, Jr.,  
 John Joseph Gartland, 2d,  
 Arthur Edwin Geiger,  
 Donald Graham,  
 John Jacob Heilman,  
 Douglas Livingstone Holm,  
 John Lewis Howell,  
 Harold Knight Hughes,

Arthur David Hyman,  
 Frank Albert Myers,  
 Richard Claxton Newbold,  
 Emanuel Nides,  
 Frank Ethelwulf Powers,  
 William Magee Raiguel,  
 Harry Price Reifsneider,  
 George Rosengarten,  
 Howard Wootten Russell,  
 Carroll William Simon,  
 Albert Tate Smith,  
 John Norman Sunderland,  
 Henry B. Tener, Jr.,  
 David Thompson,  
 John William Townsend, Jr.,  
 Jones Buckwalter Tustin,  
 Joseph Johnson Vogdes,  
 Louis Charles Widmer,  
 Robert Leaming Wood,  
 Augustus Bergey Ziegler.

*Bachelor of Science in Electrical Engineering:*

Emil Rudolph Albrecht,  
 George Albert Brooke, Jr.,  
 Samuel Butler,  
 Edward Lyon Clark,  
 Alfred Francis Del Rossi,  
 Raymond Lamm Filbert,  
 Harold Goodwin, Jr.,

Warren Carrol Jenkins,  
 John Da Costa Newbold,  
 William John Pollock,  
 Thomas Swager Potts,  
 Harry Armstrong Rishel,  
 Robert Beahm Ryder,  
 Bertine Gillette Simpson,

Arthur Elmer Tuck, Jr.

*Bachelor of Science in Economics:*

Elmer Robair Cavanna,  
 Edward Biddle Clay,  
 Joseph Hunsicker Cochran,  
 Albert John County,  
 Alexander Loller Crawford,  
 Malcolm Irvin Davis,  
 Harold Manford Elwell,  
 Howard Abraham Emig,  
 Robert Cook Folwell,  
 Gale Mevey Gibson,  
 John Bancker Gribbel,  
 George Ryer Hotaling,  
 Laurence Paschal Humphrey,  
 David Fulmer Keely,  
 Paul Killiam,  
 Frank Emil Ludwig Krieger,

Fabian Franklin Levy,  
 Joseph Wharton Lippincott,  
 David Joel Ullman Loeb,  
 John Carroll Maloney,  
 Samuel Babbitt Martin,  
 Frank Worthington Melvin,  
 Norman Thompson Moore,  
 Walter Clarkson Neely,  
 Charles Edward Paxson,  
 Richard Montgomery Philler,  
 Carl Edward Richmond,  
 Joseph Cramer Shields,  
 Evan McKinley Spangler,  
 Shunzo Takaki,  
 LeRoy Balliet Way,  
 Thomas Edward Wykes, Jr.

*Bachelor of Science in Mechanical Engineering:*

John Henry Bricker,	William Stanford Hilton,
William Laird Brown,	Richard Dutton Jack,
Isaac Baum Connor,	George Mitchell,
Frank Raymond Cupitt,	George Steelman Ogden,
Franklin Forest Dickerman,	Lloyd Arthur Sagendorph,
Horace Clement Dickey,	George Lathrop Smith,
William Goronwy Eager,	Frank Palin Spruance,
Leon B. Eichengreen,	Leonard Karl Underhill Svenson,
Gustavus Bergner Fletcher,	Thomas Bateman Wilson,
Oliver Hayward Folger,	Clarence Hall Wood.

*Chemical Engineer:*

William James Crowell, Jr.,	Frederick William Eckfeldt.
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*Civil Engineer:*

William Harper Chorlton,	Michael Monaghan,
David Henry Lane Kneedler,	Russell Biddle Smith,
Jacob Paul Jones Williams.	

*Electrical Engineer:*

W. Nelson Goodwin, Jr.,	William Gibbons Houskeeper,
Morton Githens Lloyd.	

*Mechanical Engineer:*

Leonard Tillinghast Beale,	Henry Donald Fisher,
Henry Lewis Benner,	Alexander Coxe Williams,
Robert Aitken Workman.	

*Doctor of Philosophy:*

A. Joseph Armstrong,	Jiujiro Ito,
Eugene Campbell Barker,	Merkel Henry Jacobs,
William Milton Barr,	Ross Jewell,
Thomas Bruce Birch,	Amandus Johnson,
William Blum,	George Irving Kemmerer,
James Edmund Bryan,	Jacob Buehrle Krause,
George Gailey Chambers,	Herbert Guy Krubs,
Harold Sellers Colton,	Hanson Parlin,
Thomas Conway, Jr.,	Roy Henderson Perring,
Margaret Harris Cook,	Ward Wright Pierson,
Lloyd Cadie Daniels,	Winfred Trexler Root,
Harrison Hale,	John Ahlum Schaeffer,
Jacob Daniel Heilman,	Frank Gouldsmith Speck,
Arthur Holmes,	Garrett William Thompson,
Mary Elizabeth Holmes,	Charles Vuilleumier,
Grover Gerhard Huebner,	Louise Baird Wallace.

*Master of Arts:*

Thomas Wistar Brown, 3d,  
 Bessie Rebecca Burchett,  
 Paul Terry Cherington,  
 Stanley Browning Collins,  
 Richard Arthur Daly,  
 Frank Vincent DuBois,  
 Helen Wheatley Edson,  
 Edmund Janes Gwynn,  
 Daniel Roberts Harper,  
 Arthur Charles Johnson, Jr.,

Robert MacDonald Kirkland,  
 James Flavian Lavery,  
 Harriet L. Mason,  
 Kate Nowlin,  
 Lilian Marchant Skinner,  
 Alfred deForest Snively,  
 Clarence Leonard Staples,  
 William Henry Wile, Jr.,  
 Clarence Andrew Young,  
 Elmer Bergey Ziegler.

*Master of Science:*

Edward Embree Wildman.

*Bachelor of Laws:*

Charles Hahn Albrecht,  
 Henry Arronson,  
 Isaac Ash,  
 Roy Morrow Bowman,  
 Charles Harry Bracken,  
 John William Brock, Jr.,  
 John Arthur Brown,  
 Oliver Phillips Brown,  
 William Charles Brown,  
 Garrett Arthur Brownback,  
 Russell Leroy Browne,  
 Francis French Burch,  
 Joseph Carson,  
 Randolph Willard Childs,  
 John Joseph Connroy,  
 Marshall Arthur Coyne,  
 Kenneth Bayless Crawford,  
 Edward Ignatius Cullen,  
 Thomas Aloysius Cunniff,  
 William Knight DeVictor,  
 Byron Dickson,  
 Joseph Aloysius Dolan,  
 John Gilmore Dunlap,  
 James Arthur Ewing,  
 John Ryan Forst,  
 Paul Freeman,  
 Thomas Walter Gillkyson,  
 Charles Mervyn Graham,  
 Byron Hancock,  
 John Armitage Hartpence,  
 Thomas Ogle Haydock, Jr.,

Edward Fithian Hitchcock,  
 James Grant Kehler,  
 Otto Kraus, Jr.,  
 William Ashton Skerrett Lapetina  
 Israel Kauffman Levy,  
 John Henry McCann,  
 Robert Thompson McCracken.  
 Stephen Joseph McTague,  
 William Harry Montgomery,  
 Leigh Merle Morss,  
 Henry Pepper Norris,  
 Alexander Charles Nowakoski,  
 Leon Jacob Obermayer,  
 Isaac Anderson Pennypacker,  
 Raymond Pitcairn,  
 William Portner,  
 Layton Bartol Register,  
 Meyer Sack,  
 Harry B. Saussaman,  
 William Harrison Schneller,  
 Almeron Walton Shanklin,  
 James Morgan Sheen,  
 James Blanchard Sherrard,  
 Frederick Alfred Sobernheimer,  
 Jr.,  
 DeVoe Tomlinson,  
 Ellwood Jackson Turner,  
 Paul Rhoads Wagner,  
 Jesse Stroud Weber,  
 Arthur Manley Widdows,  
 Charles Edward Zerfing.

*Doctor of Medicine:*

John Steele Abbott,  
 Clarence Jacob Albaugh,  
 Joseph Savage Alford,  
 Leo Barton Allen,  
 Harry Marshall Armitage,  
 James Harold Austin,  
 William Hotchkiss Bailey,  
 Edward Hall Baker,  
 Claude Webster Bankes,  
 Fred Bartea,  
 Rush Clettis Bauman,  
 Leo Fabian Bradley,  
 Louis Breskman,  
 Charles McVea Buckner,  
 Charles Hewson Canning,  
 Henry Rose Carter, Jr.,  
 Morris Cornfeld,  
 Abraham Nowell Creadick,  
 George Howard Cross,  
 Albert Goodwin Davis,  
 Robert Charles Davis,  
 Walter Alfred Dearth,  
 Raymond Archibald Dengler,  
 John August Derivaux,  
 Ralph Godwin DeVoe,  
 George Louis DeWald,  
 William Armstrong DeWitt,  
 Alan Lewis Diefenderfer,  
 James Franklin Donnelly,  
 Joseph Francis Dunn,  
 Walter Ernest Egbert,  
 Thomas Henry Ellis,  
 Vincent John Fenerty,  
 Joseph Fleitas,  
 George Reuben Williamson French,  
 William Ganter,  
 Norman Scott Garrison,  
 Harold James Gibby,  
 Sidney Byron Goldsmith,  
 John Franklin Gorrell,  
 John Howard Gould,  
 George Fay Gracey,  
 Joseph J. Greenblatt,  
 Joseph Franklin Hale,  
 Maurice Tracy Hansell,  
 Leonard Edwin Hanson,  
 Henry Thomas Harvey, Jr.,  
 Charles Elliott Hays,  
 Harold Edwards Hersh,  
 William Elmer Hodgson,

Ralph King Hollinshed,  
 Harvey James Howard,  
 Archibald Alexander Howell,  
 Frederick Edward Hudson,  
 Eugene Martin Hughes,  
 Fred Scott Hunlock,  
 Clifford B. Jones,  
 William Gilliam Kennon,  
 Kerwin Weidman Kinard,  
 Lyell Cary Kinney,  
 John Albert Kolmer,  
 Edward Bell Krumbhaar,  
 Julius Paul Lauer,  
 Pacifico Laygo,  
 Edwin Harvey Lenderman,  
 Charles Byron Lesher,  
 Thomas Rhodes Longmire,  
 Charles Williamson Lüders,  
 John Milton Luther,  
 Bernard Anthony McDermott,  
 Frank Braun McNierney,  
 Harry Bayne Magee,  
 Paul Budd Magnuson,  
 Josiah Preston Markley,  
 Hugh Jackson Means,  
 Henry Blackburn Miller,  
 Silas David Molyneux,  
 Harold Hollingsworth Morris,  
 Clarence Rupert Morss,  
 Jacob Moyer,  
 Hiester Henry Muhlenberg,  
 John James Mullowney,  
 Leo Clement Mundy,  
 Arthur Irwin Murphy,  
 Michael Aloysius Murray,  
 John Herr Musser, Jr.,  
 Robert Stagno-Navarra,  
 Johann Albert Norstedt, Jr.,  
 Archibald Ernest Olpp,  
 Robert Garfield Pearson,  
 Oliver Hazard Perry Pepper,  
 Perry Covington Pike,  
 John Murdoch Pratt,  
 Joseph Dixon Purvis,  
 J. Howard Rahter,  
 Lee Russell Ranck,  
 Robert Kendig Rewalt,  
 Charles Oreon Rickenbrode,  
 Abraham David Riskoff,  
 David Beach Robinson,  
 Otto Heinrich Gustav Rosenkranz,

James Jacob Rutberg,  
 Gordon Joel Saxon,  
 George Leonard Schadt,  
 Forrest Grimm Schaeffer,  
 Robert L. Schaeffer,  
 William Henry Schmidt,  
 Forrest LeRoy Schumacher,  
 Mark Emmett Scott,  
 Frederick Biesecker Shaffer,  
 John Joseph Shaw, Jr.,  
 Mitchell Shonberg,  
 Henry Thomas Simmonds,  
 Antonio Guillermo Sison,  
 Robert Skelton,  
 Charles Eastwick Smith, Jr.,  
 Asher Franklin Snyder,  
 Frank William Spicer,  
 Ferdinand Taylor Stires,  
 Jacob Lowenstein Strousse,  
 Charles Clyde Sutter,

James Francis Worley.

John Stevenson Tinker,  
 Holmes Fielding Troutman,  
 Berton Cleveland Truitt,  
 Chauncey Vandever Umsted,  
 Robert Van Valzah,  
 Roberto Leopoldo Vila,  
 Daniel Joseph Walsh,  
 William Robertson Watson,  
 Fred Deforest Weidman,  
 Henry Stine Weigle,  
 Louis Weinstock,  
 William Carter Wescott,  
 Samuel Wexlar,  
 Earle Rogers Whipple,  
 Jay Dashiell Whitham,  
 DeForest Porter Willard,  
 Albert Edgar Williams,  
 Harry David Williams,  
 Guillermo Wills,  
 Herbert Elmer Woefel,

*Doctor of Dental Surgery:*  
 Wilmer Atkinson Abbott,  
 George Emery Avery,  
 Ralph Carmichael Bamford,  
 Frank Giles Barney,  
 Arthur Edward Bassett,  
 Herbert Anthony Becht,  
 Herbert Weatherhead Bennett,  
 Johan Cornelius Marie Bierens,  
 John St. Clair Bowyer,  
 Jerrold Francis Bransfield,  
 Thomas Edward Butler,  
 William James Byrnes,  
 Juan Batista Carassés y Acosta,  
 Pascal Elie Cassé,  
 Charles Chance,  
 Paul Clipsham, Jr.,  
 Charles Monford Cole,  
 Frederic Collier,  
 Samuel Sugden Cooper,  
 George Charles Cozens,  
 Benjamin Wallace Crane,  
 Earl Mood Creveling,  
 Ellsworth Theodore Crilley,  
 Henry Dagger,  
 Harold Whitney Davis,  
 John Thomas Delaney,  
 Clarence Dukes,  
 Elmer Girvin Echternach,  
 Cornelius Beyier Eckert,

Jonas Livermore Edwards,  
 Sidney Gilbert Elliott,  
 Albert Marcus Epstein,  
 Glen Packard Farmer,  
 Herbert Jermyn Farnsworth,  
 Matthias Franklin Fennell,  
 Robert George Fitchie,  
 William Fitting,  
 James Anthony Flanagan,  
 Hugh Francis Fox,  
 Henry Doane Freeman,  
 Patrick Joseph Gallagher,  
 Robert Galloway,  
 Frank Henry Gardner,  
 Paul Gates,  
 Emil Glaser,  
 Pierré Godefroy,  
 William Arthur Garfield Grant,  
 Percy Harold Lyndsay Guthrie,  
 James Douglas Carmichael Guy,  
 Morton Seward Hahn,  
 Leslie Miller Hay,  
 Albert Draper Hequembourg,  
 George Herdocia,  
 August Ernest Hergenhahn,  
 William Hughes Hertz,  
 William Marshall Hollenback,  
 Arthur Stanley Hughes,  
 Clarence Leigh Hunt,

## DEGREES IN COURSE.

Thomas Edward Kirby,  
 Isaac Stidham Lenderman,  
 Arthur Leslie Lyell,  
 Harold Comins McMahon,  
 Percy Byron McNally,  
 Horace Edmund Marsh,  
 Benjamin Merrill,  
 Clarence K. Milam,  
 John Russell Morris,  
 Cecil George Moxham,  
 Ross Robert Myrose,  
 Ernest Joseph Neumuller,  
 Daniel Herr Nissley,  
 Robert Hodgson Nones, Jr.,  
 Thomas William Noonan,  
 Harlan Francis Ong,  
 Charles Herbert Ovelman,  
 Oliver Herbert Peify,  
 Walker Cleveland Phebus,  
 Frank Oscar Pope,  
 William Samuel Prensky,  
 Adelard Racine,  
 Frederick Solomon Yoder.

Leon John Raver,  
 John Edward Rehrig,  
 Edmund Louis Renton,  
 Calvin Willard Richards, Jr.,  
 Maurice Wheeler Russell,  
 Charles Blanchard Seely, Jr.,  
 Thomas Clifton Forsythe Shirley,  
 Louis Thomas Singer,  
 Harold Llewellyn Smith,  
 James Joseph Spring,  
 Adolph Burton Stark,  
 Charles Gowdy Stiles,  
 Robert Todd Strauss,  
 Reginald Heber Stow,  
 William Espy Thompson,  
 Frederick Charles Tibbs,  
 Guy Stanley Tippery,  
 Wilber Donahue Twitmire,  
 William Robert James Wallace,  
 Bernhard Wolf Weinberger,  
 Verne Whitney Wight,  
 Strafford Edmund Wilcox,

*Doctor of Veterinary Medicine:*

Horace Morgan Baker,	James Green Kerr,
Luis Aurelio Beltram y Moreno,	James Monroe Lawrence,
Franklin Chambers Blakely,	James Augustine McCloskey,
Harry Peter Bolich,	Walter McHenry,
Jesse Webster Bushong,	William Long Mebane,
John Herman Engel,	Alexander Mackenzie Mecray,
George Walker Famous,	John Joseph Pardue,
William Henry Fenstermacher,	Edward Augustus Parker, Jr.,
Harry Percy Gill,	Benjamin Price,
Michael Thomas Griffin, Jr.,	Edward Thomas Ryan,
Thomas Batin Harries,	Thomas Shields,
Winfield B. Hobson,	Arthur Ray Smith,
Thomas D. James,	Frank Holden Smith,
Frederick Sowden Jones,	John Baxter Taylor, Jr.,
Gerrit Parmele Judd,	Juan Carlos Tornquist,

Samuel Guness Welsh.

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In University Council, Friday, December 11, 1908:

## DEGREES IN COURSE.

*Bachelor of Arts:*

Ethelbert Watts ( <i>in absentia</i> ).....	as of the class of 1865.
Charles Edward Ronaldson.....	" " " " " 1868.
Charles Fry.....	" " " " " 1870.

*Bachelor of Science:*

Paul Thompson.....	as of the class of 1885.
Eckley Brinton Coxe, Jr.....	" " " " 1893.

*Bachelor of Science in Mechanical Engineering:*

Walter Francis Keenan, Jr.....	as of the class of 1908.
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*Doctor of Philosophy:*

Gilbert Walworth Morden	Dunlap Jamison McAdam, Jr.
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*Master of Arts:*

George Comly Foust.
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*Bachelor of Laws:*

Ransford Mix Beach .....	as of the class of 1908.
George Nicholaus Nicholson.....	" " " " 1908.
Frank Smith .....	" " " " 1908.
John Mahn Thissell .....	" " " " 1908.

*Doctor of Medicine:*

Clarence D'Azevedé Daniels.....	as of the class of 1908.
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*Doctor of Dental Surgery:*

Howard Warren Kendrick .....	as of the class of 1908.
Frederick Oscar Kraemer, Jr.....	" " " " 1908.
Charles Henry McCarthy.....	" " " " 1908.
Douglas Fleet Pyle.....	" " " " 1908.
William Wallace Westmoreland, Jr.....	" " " " 1908.

## CERTIFICATES OF PROFICIENCY.

## AWARDED BY THE FACULTY OF THE COLLEGE.

*In Architecture:*

Frank William Billman,	Carl A. McGrew,
Frederick Herbert Clarke,	John Thomas Mair,
Carl George Seibert Griese,	John Henry Mowere.

*In Biology:*

Frederick Headley Leavitt,	Michael Margolies.
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*In Business Practice and Banking:*

Harry Phillips Braddock,	Burton Maurice Joseph,
Leslie Percival Cahall,	Charles Rumbaugh Moesta,
Harry King Cornwell,	Joseph Arthur Noyes,
Howard Marion Gay,	Frederick William Woodruff, Jr.

*In Evening School of Accounts and Finance:*

Charles T. Bach,  
 William Thomas Bihlmaier,  
 James Edgar Blair,  
 George Gustav Boraske,  
 Walter Dawson Bryson, Jr.,  
 Samuel Colbeck,  
 George Samuel Crompton,  
 John Colfax Davies,  
 John Milton Deck,  
 Frank Cleo Eves,  
 John Randolph Fellows,  
 Clinton Mendenhall Finney,  
 William Russell Finnigan,  
 Joseph Michael Ford,  
 Seth Urias Frantz,  
 Charles Carroll Haig,  
 Clifford Wesley Haig,  
 James Garfield Hamilton,  
 Frank Ellwood Hare,  
 Harry Craig Hausman,  
 Charles Raymond Horton,

Vincent Adolph Jacobs,  
 John Benedict Kohler,  
 Frank Sisty Laughlin,  
 John Joseph McCaffery,  
 James Tracy Magee,  
 Dean Moore,  
 Edward Joseph Murphy,  
 James Patrick O'Brien,  
 Joseph Raymond O'Brien,  
 John Patrick O'Donnell,  
 George Washington Oesterich,  
 John Carle Parry, Jr.,  
 Charles T. Patton, Jr.,  
 Frank Leidy Reed,  
 John Michener Reeve,  
 John Roth Roberts,  
 John Martin Schultz,  
 Allen Seltzer,  
 Charles Senges,  
 Frank Marion Speakman,  
 Benjamin Franklin White.

*In Music:*

George Albert Bouchard,  
 Fleda Robertson Brockway,  
 Lillian Edith Emery,  
 Mary Fulton Gibbons,

John Sylvanus Thompson.

Laura Larzelere Hofmann,  
 William Hughes Hughes,  
 Alice Longeay McClintock,  
 Florence Emily Taylor,

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HONORS.*Senior Honors.**In Architecture:*

James Hutchinson Forsythe,  
 Gerald Anderson Holmes,

Roy Childs Jones,  
 Harvey Arthur Schwab.

*In Arts:*

John William Baker,  
 Joseph Hudson Barker,  
 John Clemmer Bechtel,  
 Martin Hays Bickham,  
 Engelhardt August Eckhardt,  
 Carl Gustave Frederick Franzén,

Berthold Henry Goldsmith,  
 Frank Albert Paul,  
 Frederick Epenetus Platt,  
 Abram Walter Smith,  
 Hoxie Harrison Smith,  
 George Wanger.

*In Biology:*

Ethel Chodowski,  
 Fanny Polano Feinberg,  
 Bessie Graham Hanley,

Bayard Henry Long,  
 Mantie Montgomery,  
 Dena D. Ungemach.

*In Chemistry:*

Allen Thomas Baldwin, Courtney Conover,  
Jacob Samuel Goldbaum.

*In Chemical Engineering:*

Waldron Cheyney Beekley, Harry Heller,  
Horace West Fairlamb, Jr., Lionel Faraday Levy.

*In Civil Engineering:*

Arthur Edwin Geiger, Frank Ethelwulf Powers,  
George Rosengarten.

*In Finance and Commerce:*

Charles Edward Paxson.

*In Mechanical Engineering:*

William Laird Brown, Isaac Baum Connor,  
Harold Goodwin, Jr.

*Sophomore Honors.**In Architecture:*

Francis Rogers Bacon, John Frederick Harbeson,  
George Chapin Robeson.

*In Arts:*

Frederick Charles Dietz,	Morton McCutcheon,
Elmer Allan Dox,	Jacob Franklin Nusbaum,
John Joseph Gilbert,	Morris Oliensis,
Archer Butler Gilfillan,	Charles Rittenhouse Pendleton, Jr.
Seabury Columba Gilfillan,	Walter Lowrie Ritter,
Malcolm Goldsmith,	Samuel Rosenbaum,
William Colbert Griffiths,	Thomas Carlyle Shaffer,
Carl Hubbard Hoover,	Augustus Robbins Stanley,
Donald McLeod Lay,	Thor Griffith Wesenberg.

*In Biology:*

Catharine Wetherill Beekley, Elizabeth Cathcart Hickson,  
Mabel Anna Purdy.

*In Chemistry:*

Edward Ellsworth Marbaker, Charles Meldrum Smith,  
Sidney Weinstock.

*In Chemical Engineering:*

Edmund Joseph Fitzmaurice, Charles Arthur Gillingham.

*In Civil Engineering:*

John Lawrence Costello,  
Frederick Hagman Dechant,

Robert Bruce Ramsay,  
Stanley Smith.

*In Finance and Commerce:*

Herbert Harger Blish,  
Arthur George Drefs,  
Charles Adam Drefs, Jr.,

Donald Knapp Harris,  
Duane Thompson Schermerhorn,  
George Jarvis Thompson,

*In Mechanical Engineering:*

Merritt Alfred Boyle,  
Marcus Kay Bryan,  
Frank Donald Fenhagen,  
Newton Jackson,

Henry Paul Kirchner,  
George Justice Mitchell,  
Robert Mackey Pitts,  
Webster Luther Rieser,

James Darrell Smith.

## PRIZES.

## IN THE COLLEGE.

## I.

## ENTRANCE PRIZES.

1. THE EUGENE DELANO PRIZE for the best special examination in the French and German required for entrance to College. To SHERMAN GARDNER COATES.

2. A prize offered by THE CLASS of 1880, for the best special examination in Mathematics by a candidate for admission to the course in Arts and Science. To FRANCIS EVANS GALLAGHER, JR.

## II.

## FACULTY PRIZES.

1. A prize for the best Essay in Intellectual and Moral Philosophy by a member of the Senior Class. Subject: *Hume's Doctrine of the Necessary Connection of Cause and Effect.* (Not awarded.)

2. A prize for the best examination by a member of the Freshman Class on Greek Prose Composition with the Accents. To WILLIAM LEVENGOOD HAUPT, with Honorable Mention of WILLIAM AUGUST HURWITZ.

3. A prize to a member of the Senior Class for the most meritorious work in the German Language and Literature over and above the regular course. To ETHEL CHODOWSKI.

4. A prize to a member of the Senior Class for the most meritorious work in the French Language and Literature over and above the regular course. (Not competed for.)
5. A first prize and a second prize for the best and second best examinations on the *Lectures on Quaternions* given to the voluntary Junior Class. (Not awarded.)
6. A prize for the best Essay in History and English Literature by a member of the Senior Class. Subject: *Contemporary Interest in England in the Settlement of Jamestown*. To JOHN CLEMMER BECHTEL.
7. A prize for the best Essay in English Literature by a member of the Junior Class. Subject: *The Novels of Joseph Conrad*. To WALTER FRANCIS COLES.
8. A prize to be divided among the best three speakers in the annual Sophomore-Freshman contest in debate. Equally to SAMUEL ROSENBAUM, MOLTKE KIESEWETTER, and HAROLD A. LIEBÈR.
9. A first prize and a second prize for the best and second best preparations illustrating the anatomy of any vegetable. First prize to BAYARD HENRY LONG; second prize to EDMUND NEWTON HARVEY. Honorable Mention of D. WALTER STECKBECK.
10. A first prize and a second prize for the best and second best preparations illustrating the anatomy or embryology of any animal. First prize to EDMUND NEWTON HARVEY; second prize to BAYARD HENRY LONG.
11. A prize to the member of the Sophomore Class who shall pass the best special examination in sight reading of Latin. To ARCHER BUTLER GILFILLAN. Honorable Mention of ELMER ALLAN DOX.
12. A prize to the member of the Sophomore Class who shall pass the best special examination in sight reading of Greek. To ELMER ALLAN DOX.

### III.

#### PRIZES FOUNDED BY ORGANIZATIONS.

1. THE HENRY REED PRIZE, founded by the SOCIETY OF THE ALUMNI for the best English Essay by a member of the Senior Class. To ETHEL CHODOWSKI. Subject: *The Poems of Thomas Bailey Aldrich*.
2. A prize for the best, and a prize for the second best, Latin Essay by a member of the Graduating Class, offered by the SOCIETY OF THE ALUMNI. First prize to CARL GUSTAVE FREDERICK FRANZÉN; second prize not awarded.

3. THE JOSEPH WARNER YARDLEY PRIZE, founded by THE CLASS OF 1877 in memory of their classmate, for the best Thesis in Political Economy by a member of the Senior Class. (Not competed for.)

4. A prize founded by the PHI KAPPA SIGMA FRATERNITY in honor of their founder, Samuel Brown Wylie Mitchell, M.D., of the Class of 1852, for the most meritorious work done in the course in English Composition of the second year. To DONALD KNAPP HARRIS, with Honorable Mention of JACOB FRANKLIN NUSBAUM and AUGUSTUS ROBBINS STANLEY.

5. THE ASSAYERS AND MINERS GANGUE offers a prize to Post-Seniors in Chemistry and to Seniors in Chemistry (four-year course). To ALLEN THOMAS BALDWIN.

6. THE PRIESTLEY CLUB, composed of Alumni of the Chemical Department, offers a prize to that member of the Graduating Class (Post-Senior or Senior, four-year course, Regular or Special), whose work for that year is most satisfactory. To JACOB SAMUEL GOLDBAUM.

7. THE T-SQUARE CLUB OF PHILADELPHIA offers annually two prizes of membership in the organization. They are awarded in October of each year to those two members of the Senior and Second-year Special Classes in Architecture, respectively, who shall have attained the highest standing in the preceding years of their courses, and who comply with the Club's general regulation regarding the submission of drawings. To GERALD ANDERSON HOLMES, of the Senior Class, and CARL A. McGREW, of the Second-year Special Class.

8. THE DANTE SOCIETY offers annually a prize for the best essay on a subject drawn from the life and works of Dante. (Not awarded.)

9. A Traveling Scholarship is awarded in the name of the Deutsche Verein by the Department of German to the most worthy student of the College who intends to continue his studies for the higher degree. To GEORGE ALLEN BICKEL, of the Graduate School.

10. THE PHILADELPHIA GROUP OF THE ALLIANCE FRANÇAISE has established a Traveling Scholarship, awarded upon recommendation of the Department of French to the student best prepared for study at a French University. To MAURICE HUSIK.

11. THE PHILADELPHIA GROUP OF THE ALLIANCE FRANÇAISE, established in 1904, awards annually a medal to the student of either the Junior or Senior Classes who has done the most meritorious work in French over and above the required courses. To STANISLAW LEONCJUSZ LANDIÉ, of the Junior Class. Honorable Mention of ETHEL CHODOWSKI, of the Senior Class.

## PRIZES FOUNDED BY INDIVIDUALS.

1. A prize founded by HENRY LABARRE JAYNE, of the Class of 1879, for the best English Composition by a member of the Freshman Class. Subject: *The Novels of Charles Brockden Brown*. To REESE DAVIS JAMES.

2. A prize founded by the late D. VAN NOSTRAND and generously continued by his business successors, for the member of the Junior Class in Civil Engineering who attains the highest general average of scholarship. To CHARLES LAWRENCE WARWICK.

3. THE GEORGE ALLEN MEMORIAL PRIZES, founded by JOSEPH G. ROSENKRANTZ, Esq., and offered to members of the Junior Class taking the Greek and Latin courses as follows:

In Greek, for the best examination on the *Oration of Demosthenes on the Crown*. (Not competed for.)

In Latin, for the best examination upon selections from Latin Literature of the Empire. First prize to CHARLES J. COLE, JR.

4. TWO DEBATING PRIZES, established by WILLIAM WEST FRAZIER, JR., a first prize and a second prize, awarded in a public debating contest. First prize to DALE HOWARD PARKE, of the Class of 1909 Law; second prize to JOSEPH ALOYSIUS DOLAN, of the Class of 1908 Law.

5. THE FRAZIER PRIZE.—GEORGE H. FRAZIER, Esq., of the Class of 1887, offers annually a prize to the student in the College of the University of Pennsylvania who, being a member of the Football team, Baseball team, Track team, or of the Crew, shall attain the highest standing in scholarship. To FRANK DOUGHTEN TYSON, member of the Track team.

6. THE ARTHUR SPAUD BROOKE MEMORIAL PRIZE in the School of Architecture, in the form of gold, silver, and bronze medals for merit in a subject of study, as designated. This prize has been established by MARIA WHARTON BROOKE, as a memorial to her son, ARTHUR SPAUD BROOKE, a graduate in Architecture of the Class of 1897. Awarded in 1907-08 in the Senior Class, for high and constant excellence in Design, the Gold Medal to GERALD ANDERSON HOLMES; the Silver Medal to HARVEY ARTHUR SCHWAB; the Bronze Medal to ROY CHILDS JONES.

7. THE J. S. H. PRIZES.—The following prizes are offered annually to students in the courses in Biology:

a. A prize to the student in the first-year class in the four-year course, or the two-year course, who, having taken the entrance examinations without condition, shall have the highest standing in

the class; the term and conduct to be determining factors, as well as the standing in examinations. (Not awarded.)

b. A prize to the student, in the second year of the above-named courses, who shall stand first in the class, under similar conditions. To CATHARINE WETHERILL BEEKLEY.

c. A prize to the third-year student in the above-named courses, who shall stand first in the class, under similar conditions. To EDMUND NEWTON HARVEY.

d. A prize to the fourth-year student in the four-year course, who shall stand first in the class, under similar conditions, the standing for the whole four years to be taken into account. MANTIE MONTGOMERY.

8. A prize is offered annually, through the generosity of DR. S. WEIR MITCHELL, for the best thesis on *The Autumnal Coloration of Plant Parts*. (Not competed for.)

9. THE MULFORD PRIZE, established through the generosity of WILLIAM H. MULFORD, Esq., of the Class of 1902, is awarded annually to that member of the Graduating Class who shall attain the highest excellence in the expressive reading of Latin Prose and Verse, as shown by a special examination. To CARL GUSTAVE FREDERICK FRANZÉN.

10. THE GEORGE SCHLEICHER PRIZE.—Under the will of the late GEORGE SCHLEICHER, of Philadelphia, the German Society of Pennsylvania holds in trust a fund for maintaining in perpetuity a prize to be named after the testator. This prize is awarded annually to the best student—of whatever nationality he may be—in the German Language, or German Literature or both. To ETHEL CHODOWSKI.

11. THE JOHN STEWARDSON MEMORIAL SCHOLARSHIP IN ARCHITECTURE.—The holder of this scholarship (established in 1897) is required to spend one year in travel and in the study of Architecture in Europe under the direction of the Managing Committee. The award is made annually to that candidate successful in the final examination in Design. To HARVEY ARTHUR SCHWAB, of the Senior Class, with First Mention to JAMES H. FORSYTHE, of the Senior Class, and equal Second Mention to GERALD ANDERSON HOLMES and ROY CHILDS JONES, both of the Senior Class.

12. THE ALUMNI FELLOWSHIP IN ARCHITECTURE.—Open only to Pennsylvania Alumni, the holder being required to spend not less than one year in foreign travel and study, under a programme arranged with the Professor of Architecture, and approved by the Provost. Persons who have taken either the degree of the four-

year course or the certificate of the two-year special course, and who have neither secured another traveling scholarship nor admission to the Ecole des Beaux Arts, are eligible to the competitions, which are held annually. (Not open to competition 1907-08.)

13. THE PHILO S. BENNETT PRIZE, given through the generosity of the HONORABLE WILLIAM J. BRYAN. The interest on \$400.00 is to be awarded annually for the best essay on *The Principles of Free Government*. (Not competed for.)

14. THE MARK AND SIMON HASSSLER PRIZE.—MRS. LEON S. FOX has established a prize in the Department of Music of the annual value of twenty-five dollars in gold. This prize is to be known as The Mark and Simon Hassler Prize. For the terms upon which the prize is to be awarded, reference is to be had to the Professor of Music. (Not competed for.)

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#### IN THE DEPARTMENT OF LAW:

THE P. PEMBERTON MORRIS PRIZE, for the best written examination in Evidence, Pleading and Practice at Law and in Equity. To ROY MORROW BOWMAN, with Honorable Mention of WILLIAM ASHTON SKERRETT LAPETINA.

The following students received honors for their third-year work:  
WILLIAM ASHTON SKERRETT RANDOLPH WILLARD CHILDS  
LAPETINA, DEVOR TOMLINSON,  
GARRETT ARTHUR BROWNBACK, ISRAEL KAUFFMAN LEVY,  
OTTO KRAUS, JR., ROY MORROW BOWMAN.

The following third-year students received a general average of 90 and above in the combined work of their second and third-year courses, and have therefore received their degrees *cum laude*:

WILLIAM ASHTON SKERRETT DEVOR TOMLINSON,  
LAPETINA, ROY MORROW BOWMAN,  
GARRETT ARTHUR BROWNBACK, PAUL FREEMAN,  
OTTO KRAUS, JR., RANDOLPH WILLARD CHILDS.

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#### IN THE DEPARTMENT OF MEDICINE.

THE ALUMNI MEDAL to the member of the Graduating Class who attains the highest general average in examination. To JAMES HAROLD AUSTIN.

**THE DR. SPENCER MORRIS PRIZE.**—The annual income derived from the investment of Ten Thousand Dollars, will be awarded each year to that Medical Student of the Graduating Class who shall pass the best examination for the degree of Doctor of Medicine. To OLIVER HAZARD PERRY PEPPER.

The Prize of an Obstetrical Forceps, offered by the Professor of Obstetrics, to the member of the Graduating Class who furnishes the best report of a case of Obstetrics occurring in the University Maternity Hospital. To LEO FABIAN BRADLEY.

The Prize of an Antiseptic Minor Operating Case, offered by the Clinical Professor of Orthopedic Surgery, for the best practical work in Orthopedic Surgery, or for the best report of his Clinic, or for an acceptable design in Apparatus. To GORDON JOEL SAXON, with Honorable Mention for MORRIS CORNFELD.

**THE FREDERICK A. PACKARD PRIZE** of One Hundred Dollars, offered by a friend of the University to the member of the Graduating Class who has proven himself to be the most proficient in the course in Clinical Medicine. To JOHN ALBERT KOLMER.

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#### IN THE DEPARTMENT OF VETERINARY MEDICINE.

**THE J. B. LIPPINCOTT PRIZE** of One Hundred Dollars, awarded to the member of the Graduating Class who, in the three years spent in the Veterinary Department of the University, attains the highest general average in examinations. To JAMES GREEN KERR.

A prize of an Ecraseur, offered by a friend of the Department to the member of the second-year class who passes the best examinations in Veterinary Anatomy. To WILLIAM JOSEPH LEE.

## **PART VII**

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**UNDERGRADUATE AND ALUMNI SOCIETIES**



## **UNDERGRADUATE AND ALUMNI SOCIETIES.**

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### **STUDENT SOCIETIES.**

**THE HOUSTON CLUB**, to membership in which any member of the University is eligible, is the exponent of the social side of Pennsylvania life. Its home is Howard Houston Hall, which is located in almost the exact geographical centre of the University's group of buildings. This situation embodies to a large extent the main idea of its existence as a centralization of undergraduate interests. Here the students of all departments may meet on common ground, and pass their leisure hours in healthy recreation and amusement. The Hall was erected through the generosity of the late H. H. Houston, a trustee of the University, and his wife, as a memorial to their eldest son, HENRY HOWARD HOUSTON, JR., a member of the Class of 1878, College.

The Hall was formally dedicated on January 2, 1896. Its equipment includes a large central lobby, a library and reading-room; billiard and pool tables, bowling alley, post-office "sub-station," barber shop, book and general supply store; a luncheon buffet and dining-room; athletic trophy rooms; a large auditorium with grand organ; rooms for the University papers and organizations; a dark-room for photographic purposes; etc.

Any student, alumnus or officer of the University of Pennsylvania may become a member of the Club. There are five classes of membership—Honorary, Life, Active, Associate Resident, and Associate Non-Resident. An active member is one who is pursuing a course at the University. The Associate membership is composed of officers, alumni and ex-students who have left in good standing. Membership fees: Life, \$20; Active, \$3 a year; Associate Resident, \$3 a year (living within a radius of 25 miles from Philadelphia); Associate Non-Resident, \$1 a year.

**THE PHILOMATHIAN SOCIETY**, founded in 1813, holds meetings weekly during the College year at its rooms in College Hall. All undergraduates of the College are eligible to membership. The order of exercises includes orations, essays and a debate, besides the usual general business; and these afford excellent practice in

the principles of parliamentary law. A valuable library is owned by the Society.

THE ZELOSOPHIC SOCIETY, founded in 1829, holds weekly meetings at its rooms in College Hall during the College year. All students in the University are eligible to membership. The work of the Society is carried on through the usual medium of essays, orations and debates.

THE COMBINED MUSICAL CLUBS consist of the Glee, Banjo and Mandolin Clubs, with a total active membership of about seventy-five. The Clubs give one or more concerts each year in and near Philadelphia. It is customary also for the Clubs to take a trip, generally either in the South or West, giving concerts in prominent cities.

The University Students' Band, comprising twenty-six pieces, is a new organization which promises to add importantly to the musical activities of college life.

THE MASK AND WIG CLUB was founded in 1889 (incorporated in 1892) to foster the undergraduate dramatic interests of the University, and to promote social intercourse among its members. An annual performance is given at the time of the Easter Recess, running for one week at a Philadelphia theatre, and out-of-town dates are also played. The general management of the Club, and of its unique house, is in the hands of the graduate members, while the undergraduates carry out all the details of its annual productions. The annual performances and the numerous farces staged in the Club House each year are among the most pleasant relaxations of the student from the serious work of the class-room.

THE CERCLE FRANÇAIS, organized in 1899, has for its purpose the study and cultivation of the French language, and is managed exclusively by the undergraduates. Students of any department of the University are eligible. There are also honorary and associate members. Lectures are given, under the auspices of the Cercle, by prominent French lecturers; and a play, in which the parts are taken by undergraduates, has become an annual feature of the Cercle, as well as one of the social events of the University year.

THE DEUTSCHER VEREIN, founded in 1903, seeks to unite all students of the University interested in the study of the German language and German thought. It holds weekly meetings, which are also open to those in the company of members. Readings, recitations and debates, varied by visits to the German Theatre,

and talks by the Professors of the Germanic Department and other German scholars, constitute the chief interests of the club.

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### INTERCOLLEGIATE DEBATING.

The University is a member of the Triangular Intercollegiate Debating League, of which the other members are Cornell and Columbia. Pennsylvania's teams are chosen at trial debates which are open to all students in the University, except first year graduate students who have scholarships.

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### CHRISTIAN ASSOCIATION.

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#### BOARD OF DIRECTORS.

*President*.—Philip E. Howard.

Theodore E. Brown,	Rt. Rev. Alexander Mackay-
Albert R. Brunker,	Smith, S. T. D.,
Rev. Prof. A. T. Clay, Ph. D.,	Marshall S. Morgan,
Prof. Edwin T. Darby, M. D.,	Prof. John H. Musser, M. D.,
D. D. S.,	Howard W. Page,
W. W. Frazier,	Vice-Provost Edgar F. Smith,
H. Kennedy Hill, M. D.,	Ph. D., Sc. D., LL. D.,
Samuel F. Houston,	Rev. Floyd W. Tomkins, S. T. D.,
Joel H. Hildebrand, Ph. D.,	Prof. De Forest Willard, M. D.,
Rev. Oliver Huckel, Sc. D.,	Edward C. Wood,
Alba B. Johnson,	H. C. Wood, M. D., LL. D.,
	H. C. Wood, Jr., M. D.

The activities of the Association are as follows:

- (a) University Service each Sunday morning at 11 o'clock, conducted by distinguished clergymen and Christian leaders.
- (b) A Christian Settlement, conducted by the students at Lombard and Twenty-sixth Streets, for the benefit of the people of the neighborhood.

The new building, "University House," was completed at an expenditure of \$60,000.

Fourteen students and women workers live in the building and manage the work under the supervision of the Resident

Directors, Mr. and Mrs. T. S. Evans, and the Assistant Directors, Mr. and Mrs. Edward S. Gilfillan.

Over one hundred students assist in this undertaking in various ways.

- (c) Bible Lectures and Group Bible Classes meeting weekly in Dormitory Rooms, Fraternity Houses and Houston Hall. Over two hundred and fifty students were enrolled last year in thirty-three groups under the leadership of Professors, students and Association Secretaries.
- (d) Foreign Missionary Lectures, Study Classes, and the University Medical School in Canton, China, which includes the support of Dr. J. C. McCracken, '01, while he conducts a Medical Dispensary and Hospital in Canton, and gradually establishes a Medical School to be supported by University men.

The Board of Trustees, acting under appointment of the Christian Association, in charge of this department of the work, consists of: George Wharton Pepper, *Chairman*, Samuel F. Houston, Charles H. Frazier, M.D., William Campbell Posey, M.D., William Guggenheim, Rufus B. Scarlett, M.D., Henry H. Collins, Jr., Thomas S. Evans, William M. Schultz, M.D., *Secretary*, Edward C. Wood, *Treasurer*.

- (e) Supplying of speakers from the University to Churches, Missions, Societies, Preparatory Schools, etc.
- (f) Individual calls upon students in their rooms, and personal effort to lead them into permanent right living.
- (g) Supplying of "Hand Books" and information to new students concerning life and customs at the University.

For information on any of the above subjects apply as follows:

Thomas St. Clair Evans, General Secretary, Houston Hall.

H. W. Fulweiler, College Secretary, Houston Hall.

G. V. Aldrich, Medical and Veterinary Secretary, Houston Hall.

S. B. Collins, A. M., Wharton School and Dental Secretary.

Edward Cope Wood, Treasurer, Houston Hall.

The corporate name of the organization is "Christian Association of the University of Pennsylvania."

**ALUMNI SOCIETIES.**

The Alumni of the University are organized (1) in local societies, throughout the United States and foreign countries; (2) in departmental societies, with headquarters in the city of Philadelphia; and (3) in bodies of a wider representative character, with headquarters in the same city.

Of the first group there are at present in active existence almost fifty societies; of the second group there are seven, embracing members of (a) the College; (b) the Department of Law; (c) the Department of Medicine; (d) the Department of Dentistry; (e) the Department of Veterinary Medicine; and (f) the School of Architecture. Of the third group, there are two organizations, to wit: the Central Committee of the Alumni, and the General Alumni Society.

A schedule of these bodies is appended. For the sake of greater convenience, the above grouping is reversed below. The local societies are listed geographically and alphabetically.

The organization of local alumni societies outside of Philadelphia has been effected under the auspices of the General Alumni Society.

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**CENTRAL COMMITTEE OF THE ALUMNI.**

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*President.*—Henry Budd.

*Secretary.*—Dr. Ewing Jordan, 1510 Walnut St., Philadelphia.

*Treasurer.*—Dr. William H. Klapp, 2223 De Lancey Place,  
Philadelphia.

This Committee was established by enactment of the Corporation in March, 1882.

Under the Revised Statutes (Sec. 33), the Central Committee is authorized, for every third vacancy which may occur in the Board of Trustees, to nominate four candidates, one of whom may be elected a member of the Board. If none of these be elected, others are to be nominated until the vacancy shall have been filled.

The members are thirty in number, six elected annually for a term of five years, of whom two must be graduates of the College of at least three years' standing, two of the Medical and allied Departments, and two of the Law Department. Stated meetings are held on the fourth Mondays of March, May, September and December.

**GENERAL ALUMNI SOCIETY.**

*President*.—S. F. Houston.

*Vice-Presidents*.—H. Laussat Geyelin; Dr. Horatio C. Wood; Hampton L. Carson; Dr. Leonard Pearson; Dr. R. H. D. Swing.

*Secretary-Treasurer*.—Thomas B. Donaldson, 3451 Woodland Avenue, Philadelphia.

This Society was organized in June, 1895, and incorporated in June, 1897.

**OBJECTS:** "(I) The promotion of the welfare of the University of Pennsylvania through the stimulation of the interest therein of all graduates and non-graduates, matriculates of all departments, by keeping them in touch with and informed of the doings of their Alma Mater, and the cultivation among them of a fraternal spirit on the University principles. (II) The furnishing of such specific information as may be sought by any graduate or former matriculate upon any subject in connection with the University, or any of its organizations. (III) The disbursing of any contributions made by the alumni for specific objects connected with the University. (IV) The maintenance of a list, as nearly correct as possible, of the names and addresses of all matriculates of the University." The Society publishes *The Alumni Register*, a quarterly, literary magazine.

**MEMBERS:** A graduate of any department of the University; a matriculate of a class which has graduated; a member of the Board of Trustees, or an officer of instruction, or a holder of an honorary degree from the University; may become a member of the Society upon payment of a subscription in such amounts as he may elect, but not less than a required minimum, to the Treasurer of the Society. Such subscriptions cover one calendar year from the date of payment, and include one year's subscription to *The Alumni Register*.

The offices of the Society are at 3451 Woodland avenue, West Philadelphia, where a directory is kept of all those connected with the University as students, alumni or officers, and where a file of college and university periodicals is maintained. The offices are open daily from 9 A. M. to 5 P. M. (Saturdays, 1 P. M.). Telephone connection.

**DEPARTMENTAL SOCIETIES.****SOCIETY OF THE [COLLEGE] ALUMNI.**

*President*.—Henry Budd.

*Vice-Presidents*.—A. Lewis Smith, Charles C. Harrison, Jos. G. Rosengarten, Edward P. Cheyney.

*Secretary*.—Percy Van D. Shelly, University of Pennsylvania.

*Treasurer*.—Dr. Owen L. Shinn, University of Pennsylvania.

*Historiographer*.—Gregory B. Keen.

**SOCIETY OF THE ALUMNI OF THE LAW DEPARTMENT.**

*President*.—H. Laussat Geyelin.

*Vice-Presidents*.—Frank P. Prichard, Lewis L. Smith.

*Recording Secretary*.—Charles Francis Gummey.

*Corresponding Secretary*.—Ernest L. Green, Media, Pa.

*Treasurer*.—Charles L. McKeehan, 321 Chestnut Street,  
Philadelphia.

**SOCIETY OF THE ALUMNI OF THE DEPARTMENT OF MEDICINE.**

*President*.—Charles K. Mills.

*Vice-Presidents*.—Dr. Wharton Sinkler, Dr. Theodore Diller, Dr. Alonzo E. Taylor, Dr. De Witt Sherman, Dr. Allen J. Smith,  
Dr. Augustus Thayer, Dr. H. H. Whitcomb.

*Secretary-Treasurer*.—Dr. Edward A. Shumway, 2007 Chestnut St.,  
Philadelphia.

*Historian*.—Dr. Roland G. Curtin.

**PHILADELPHIA ALUMNI SOCIETY OF THE MEDICAL DEPARTMENT.**

*President*.—Dr. J. Alison Scott.

*Honorary Vice-President*.—Charles C. Harrison.

*Vice-Presidents*.—Dr. J. Howard Seiple, Dr. De Forest Willard,  
Dr. R. C. Norris.

*Treasurer*.—Dr. Herbert B. Carpenter, 1805 Spruce St.

*Secretary*.—Dr. B. Franklin Stahl, 1727 Pine St., Philadelphia.

*Recording Secretary*.—Dr. Wm. S. Wray.

### DENTAL ALUMNI SOCIETY.

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*President*.—Dr. J. G. Lane, '90 D.

*First Vice-President*.—Dr. John M. Fogg, '91.

*Second Vice-President*.—Dr. Joseph Huggins, '97.

*Third Vice-President*.—Dr. W. F. L. Barry, '06.

*Secretary-Treasurer*.—Dr. Victor Cochran, 1628 N. 17th St.,  
Philadelphia.

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### SOCIETY OF THE ALUMNI OF THE DEPARTMENT OF VETERINARY MEDICINE.

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*President*.—Dr. Hiram P. Eves, '87 V.

*Vice-President*.—Dr. Robert Formad, '88 V.

*Secretary-Treasurer*.—Dr. Benjamin T. Woodward, U. S. Bureau  
of Animal Industry, Washington, D. C.

*Historian*.—Dr. Simon J. J. Harger, '87.

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### GENERAL ARCHITECTURAL ALUMNI SOCIETY.

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*President*.—Arthur E. Willauer.

*Vice-President*.—Elliston P. Bissell.

*Treasurer*.—Oscar M. Hokanson.

*Corresponding Secretary*.—John G. McIlvaine, 3209 Baring St.,  
Philadelphia.

*Recording Secretary*.—Livingston Smith.

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### LOCAL SOCIETIES.

#### CALIFORNIA.

##### NORTHERN CALIFORNIA ALUMNI ASSOCIATION.

*President*.—Prof. R. M. Alden.

*Vice-Presidents*.—Dr. Harold Brunn, Samuel W. Cheyney, Esq.,  
Dr. C. A. McCowan.

*Secretary-Treasurer*.—Dr. G. H. Richardson, Shreve Building,  
San Francisco, Cal.

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##### SOUTHWESTERN ALUMNI ASSOCIATION, LOS ANGELES, CAL.

*President*.—Dr. C. E. Stivers.

*Vice-President*.—Dr. T. J. Coffey.

*Secretary-Treasurer*.—Dr. T. P. Gerson, Los Angeles, Cal.

## COLORADO.

**"ROCKY MOUNTAIN ALUMNI ASSOCIATION, U. OF PA."***President*.—Dr. Howell T. Pershing.*Secretary-Treasurer*.—George M. Taylor, Colorado Springs, Col.

## DISTRICT OF COLUMBIA.

**DISTRICT OF COLUMBIA ALUMNI ASSOCIATION, WASHINGTON, D. C.***President*.—Dr. Harry C. Yarrow.*Treasurer*.—Dr. James G. McKay, 2019 Columbia Road,  
Washington, D. C.

## ILLINOIS.

**CHICAGO ALUMNI ASSOCIATION.***President*.—Dr. James N. Hyde.*Vice-President*.—Dr. Charles H. Lodor.*Secretary-Treasurer*.—Dr. George W. Boot, 1943 Sherman Ave.,  
Evanston, Ill.

## INDIANA.

**INDIANA ALUMNI SOCIETY.***President*.—Dr. Albert M. Cole.*Vice-President*.—Dr. Jonathan B. Clark.*Secretary-Treasurer*.—Oscar Schmidt, Germany Fire Insurance Co.,  
Indianapolis, Ind.

## IOWA.

**UNIVERSITY OF PENNSYLVANIA CLUB OF DES MOINES, IOWA.***President*.—Dr. James T. Priestly.*Vice-President*.—Dr. J. C. Rockafellow.*Secretary-Treasurer*.—Ralph H. Plumb, 1415 Centre St.,  
Des Moines, Iowa.

## MARYLAND.

**MARYLAND ALUMNI ASSOCIATION.***President*.—\_\_\_\_\_,*Vice-Presidents*.—Dr. Thomas Opie, Dr. J. McP. Scott,  
William M. Ellicott.*Secretary-Treasurer*.—Dr. Joseph C. Bloodgood, 904 North Charles  
St., Baltimore, Md.

**MINNESOTA.****NORTHWEST ALUMNI ASSOCIATION.***President*.—Dr. Henry L. Williams.*Secretary-Treasurer*.—\_\_\_\_\_**MISSOURI.****KANSAS CITY ALUMNI ASSOCIATION.***President*.—Dr. Ernest F. Robinson.*Vice-President*.—Dr. Franklin E. Murphy.*Secretary-Treasurer*.—Dr. Scott P. Child, Altman Building, Kansas City, Mo.**UNIVERSITY OF PENNSYLVANIA ALUMNI ASSOCIATION,**

ST. LOUIS, MO.

*President*.—James C. Travilla.*Vice-President*.—Dr. Clarence Stratton.*Secretary-Treasurer*.—Dr. E. G. Hoffsten, McKinley High School, St. Louis, Mo.**NEBRASKA.****OMAHA ALUMNI ASSOCIATION.***President*.—Dr. Horace Ludington.*Vice-President*.—Dr. Charles E. Smith.*Secretary-Treasurer*.—\_\_\_\_\_**NEW ENGLAND.****NEW ENGLAND ALUMNI ASSOCIATION.***President*.—George A. Sagendorph.*Secretary-Treasurer*.—W. Ray Baldwin, Tremont Bldg., Boston, Mass.**WESTERN NEW ENGLAND ALUMNI SOCIETY.***President*.—Dr. Walter R. Weiser.*Secretary-Treasurer*.—Dr. Harry C. Ray, Springfield, Mass.**NEW JERSEY.****ATLANTIC CITY CLUB OF THE UNIVERSITY OF PENNSYLVANIA.***President*.—Hon. Allen B. Endicott.*Vice-President*.—Dr. Jesse B. Thompson.*Secretary-Treasurer*.—H. A. Stout, Atlantic City.

**NEW JERSEY ALUMNI ASSOCIATION.**  
(Formerly North Jersey Alumni Association.)

*President*.—Dr. Richard S. Hopkins.  
*Vice-Presidents*.—Dr. William S. Collier, Dr. E. S. Hawke.  
*Secretary-Treasurer*.—Dr. William Geo. Hanrahan, 25 Fulton St., Newark, N. J.

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**NEW YORK.**

**EASTERN NEW YORK ALUMNI ASSOCIATION.**

*President*.—John A. Capp,  
*Vice-President*.—Dr. George A. Sullivan.  
*Secretary-Treasurer*.—Dr. L. S. Blatner, 49 Eagle St., Albany, N. Y.

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**CENTRAL NEW YORK ALUMNI ASSOCIATION.**

*President*.—William G. Marot.  
*Vice-President*.—G. Norwood Comly.  
*Secretary*.—Dr. C. H. Barnes, 911 University Block, Syracuse, N. Y.

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**ROCHESTER SOCIETY.**

*President*.—Dr. J. F. W. Whitbeck.  
*Secretary-Treasurer*.—Dr. Benedict S. Hert, Rochester, N. Y.

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**UNIVERSITY OF PENNSYLVANIA MEDICAL CLUB OF NEW YORK CITY.**

*President*.—Dr. James B. Clemens.  
*Vice-President*.—Dr. Charles N. B. Camac.  
*Secretary-Treasurer*.—Dr. Tasker Howard, 388 Clinton St., Brooklyn, N. Y.

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**UNIVERSITY OF PENNSYLVANIA CLUB OF NEW YORK CITY.**

*President*.—Henry G. Ward.  
*Vice-President*.—William Guggenheim.  
*Secretary-Treasurer*.—Harry B. Mingle, 80 William St., N. Y. C.

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**WESTERN NEW YORK SOCIETY.**

*President*.—Charles A. Upson.  
*Vice-President*.—Dr. J. F. W. Whitbeck.  
*Secretary-Treasurer*.—M. Glenn Folger, Lockport, N. Y.

**OHIO.****CINCINNATI ALUMNI ASSOCIATION.**

*President.*—Dr. H. Stow Garlick.

*Vice-President.*—Albert S. Kelley.

*Secretary-Treasurer.*—Dr. Ashton B. Heyl, Madison and Wold Aves., Cincinnati, Ohio.

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**MIAMI ALUMNI ASSOCIATION.**

*President.*—Dr. John S. Beck.

*Vice-President.*—Dr. John H. Rogers.

*Secretary.*—Dr. Burch C. West, Miami Valley Hospital, Dayton, Ohio.

*Treasurer.*—Dr. William Shuler, Miamisburgh, Ohio.

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**OREGON.****PORLAND, OREGON, ALUMNI ASSOCIATION.**

*President.*—Dr. William Boys, Portland.

*Secretary-Treasurer.*— — —.

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**PENNSYLVANIA.****ALLEGHENY COUNTY ALUMNI ASSOCIATION.**

*President.*—Dr. Charles A. Wishart.

*Vice-Presidents.*—Dr. W. W. Jones, Dr. T. M. T. McKennan.

*Secretary-Treasurer.*—W. B. Pearsall, Frick Bldg., Pittsburgh, Pa.

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**BERKS COUNTY ALUMNI ASSOCIATION.**

*President.*—Dr. Hiester Bucher.

*Vice-President.*—Dr. George S. Schlegel.

*Secretary-Treasurer.*—Dr. Otto J. Specker, 143 North 8th St., Reading, Pa.

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**BUCKS COUNTY ALUMNI SOCIETY.**

*President.*—George A. Jenks.

*Vice-President.*—John A. Swartley.

*Secretary-Treasurer.*—Dr. Frank B. Swartzlander, Doylestown, Pa.

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**CAMBRIA COUNTY ALUMNI SOCIETY.**

(Johnstown and Vicinity.)

*President.*—V. S. Doebler.

*Vice-President.*—D. M. Stackhouse.

*Secretary-Treasurer.*—J. N. Muir, Johnstown, Pa.

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**DAUPHIN COUNTY ALUMNI SOCIETY.***President*.—Rev. George S. Chambers.*Vice-President*.— — — — .*Secretary*.—J. Allan Donaldson, Harrisburg, Pa.*Treasurer*.—Dr. George B. Kunkel.**ERIE ALUMNI SOCIETY.***President*.—Dr. D. H. Strickland.*Vice-President*.—Dr. Ira J. Dunn.*Secretary-Treasurer*.—Edwin H. Brevillier, Erie, Pa.**JUNIATA VALLEY ALUMNI SOCIETY.**

(Central Pennsylvania.)

*President*.— — — — .*Vice-President*.—Dr. A. S. Harshberger.*Secretary-Treasurer*.—Cloyd B. Ewing, Mt. Union, Pa.**LANCASTER COUNTY ALUMNI SOCIETY.***President*.—Dr. Walter B. Weidler.*Vice-President*.—Dr. B. Frank Witmer.*Secretary-Treasurer*.—James F. McCoy, 52 N. Duke St., Lancaster, Pa.**LEBANON COUNTY ALUMNI ASSOCIATION.***President*.—Dr. William M. Guilford, Lebanon, Pa.*Vice-President*.—Dr. Charles L. Miller.*Secretary-Treasurer*.— — — — .**LEHIGH COUNTY ALUMNI ASSOCIATION.***President*.—Dr. H. H. Herbst.*Vice-Presidents*.—Dr. William B. Erdman, Dr. Frank K. Hartzell.*Secretary*.—Charles O. Hunsicker, 141 N. 8th St., Allentown, Pa.*Treasurer*.—Dr. George T. Sieberling.**LUZERNE COUNTY ALUMNI SOCIETY.***President*.—Dr. Alexander Gray Fell.*Vice-Presidents*.—William J. Goeckel, William G. Weaver, T. A. Butkiewicz.*Secretary-Treasurer*.—Maurice B. Ahlborn, Wilkesbarre, Pa.

**NORTH CENTRAL ALUMNI ASSOCIATION.**

*President*.—Dr. George D. Nutt.

*Vice-Presidents*.—Dr. Frank P. Ball, Wm. P. Beeber,  
Dr. Charles C. Walker.

*Secretary-Treasurer*.—Dr. Edward Lyon, Williamsport, Pa.

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**NORTHUMBERLAND COUNTY ALUMNI ASSOCIATION.**

*President*.—Rev. Charles Morison.

*Vice-President*.—Dr. E. A. Gerberich.

*Secretary-Treasurer*.—Dr. Harvey M. Becker, Sunbury, Pa.

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**SCRANTON CLUB.**

*President*.—Dr. J. L. Wentz.

*Vice-Presidents*.—Paul Bedford, Esq., Dr. G. W. Guthrie, Dr. E. J. Donnegan, H. R. Valentine, Dr. Charles S. Gelbert.

*Secretary-Treasurer*.—W. H. Easton, Scranton, Pa.

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**YORK COUNTY ALUMNI ASSOCIATION.**

*President*.—George S. Schmidt.

*Vice-President*.—Donald H. Yost.

*Secretary-Treasurer*.—Dr. Henry E. Trostel, York Springs, Pa.

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**TEXAS.****TEXAS ALUMNI ASSOCIATION.**

*President*.—Dr. Bryce W. Fontaine.

*Vice-President*.—

*Secretary-Treasurer*.—Dr. W. P. Breath, Galveston, Texas.

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**UTAH.****UTAH ALUMNI ASSOCIATION.**

*President*.—Dr. Henry La Motte.

*Vice-President*.—Dr. W. L. Ellerbeck.

*Secretary-Treasurer*.—Prof. W. Clarence Ebaugh, Salt Lake City, Utah.

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**WASHINGTON.****SEATTLE ALUMNI ASSOCIATION.**

*President*.—Dr. Park W. Willis.

*Vice-President*.—Dr. Everett O. Jones.

*Secretary-Treasurer*.—John C. Stanley, 204 24th Ave., S., Seattle, Wash.

**WEST VIRGINIA.****WEST VIRGINIA ALUMNI ASSOCIATION.***President*.—Dr. L. D. Wilson.*Vice-President*.—William E. Krupp.*Secretary*.—Dr. Thomas F. Downing, Wheeling, W. Va.*Treasurer*.—Dr. William F. McKinley, Wheeling, W. Va.

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**WISCONSIN.****WISCONSIN ALUMNI ASSOCIATION.***President*.—Dr. Edwin A. Geilfuss.*Vice-President*.—Franklin R. Garlock.*Secretary-Treasurer*.—Robert R. Freeman, Wells Bldg., Milwaukee, Wis.

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**FOREIGN SOCIETIES.****AUSTRALIA.****UNIVERSITY OF PENNSYLVANIA GENERAL ALUMNI SOCIETY IN AUSTRALIA.***President*.—Dr. Ernest Deck.*Vice-President*.—Dr. Percy A. Ash.*Secretary-Treasurer*.—Dr. W. C. P. Hough, Sydney, N. S. W.

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**BRAZIL.****BRAZIL ALUMNI SOCIETY.**

(University of Pennsylvania.)

*President*.—*Vice-President*.—Hon. Alfred Ellis.*Secretary-Treasurer*.—Dr. Charles Keyes, 117 Rua da Assemblea, Rio de Janeiro, Brazil.

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**CHINA.****CHINESE ALUMNI SOCIETY.***President*.—L. B. Ridgely, Wuchang, China.*Vice-President*.—Dr. J. C. McCracken, Canton, China.*Secretary*.—P. R. Stockman, Ichang, Hupeh, China.

**FRANCE.****PARIS, FRANCE, ALUMNI ASSOCIATION.***President*.—Dr. F. Field Rokeby Robinson.*Vice-President*.—Dr. Adolf Wetzel.*Secretary-Treasurer*.—Dr. Zacharie Endlitz, 3 Rue d'Athènes,  
Paris, France.**JAPAN.****JAPANESE ALUMNI SOCIETY ("SAME WINDOW" SOCIETY).***Secretary-Treasurer*.—Sadajiro Sugiura, Tokio, Japan.**MANILA, P. I.****ORIENT ALUMNI ASSOCIATION.***President*.—Dr. John A. Murtagh, U. S. A.*Treasurer*.—Dr. M. A. DeLaney, U. S. A.*Secretary*.—Dr. J. C. Whinnery, Dental Surgeon, U. S. A.**SWITZERLAND.****ZURICH ALUMNI ASSOCIATION.***President*.—Dr. G. A. Stoppiani.*Vice-President*.—Dr. J. H. Muller.*Secretary-Treasurer*.—Dr. Wm. C. Achard, 14 Theatrestrasse,  
Zurich, Switzerland.

**PART VIII**  
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**LISTS OF STUDENTS**



## LISTS OF STUDENTS.\*

### THE COLLEGE.

The College Courses are indicated as follows:—*Arts and Science, A.; Finance and Commerce, Wh.; Biology, B.; Science and Technology: Four-Year Technical Courses, Chemistry, Ch.; Chemical Engineering, Ch. E.; Civil Engineering, C. E.; Mechanical Engineering, M. E.; Electrical Engineering, E. E.; Architecture, Arch.; Music, M.*

#### SENIORS.

Name.	Course.	Residence.	City Address.
Aldrich, John Terrell,	C. E.,	Philadelphia,	3429 N. 22d St.
Allen, John Edward,	E. E.,	Erie,	3531 Locust St.
Atkin, Hercules Boyd,	M. E.,	Philadelphia,	3615 Baring St.
Atkinson, Walter Franklin,	A.,	Stratford, N. J.	5327 Baltimore Ave.
Baker, William Ellis,	C. E.,	Philadelphia,	Dorm. 120 McKean.
Ballard, Frederic Lyman,	A.,	do.	1820 Spg. Garden St.
Bamberger, Morton DeWitt,	Wh.,	Brooklyn, N. Y.,	Dorm. 387 Lippincott.
Bankes, Earl Frederick,	Arch.,	Middleport,	Dorm. 123 McKean.
Barrett, Wilton Agnew,	Wh.,	Philadelphia,	3604 Walnut St.
Bartholomew, Paul A.,	Arch.,	Greensburg,	2826 Columbia Ave.
Bauder, Harold Leo,	C. E.,	Philadelphia,	123 S. 36th St.
Baxter, Osmond Monroe,	Arch.,	Cold Spring on Hudson, N. Y.,	[732 E. Chelten Ave.]
Beck, Alfred Fortin,	C. E.,	Germantown,	Dorm. 323 Leidy.
Beneker, Albert Lawrence,	Arch.,	Cincinnati, Ohio,	5405 Haverford Ave.
Benham, Charles, Jr.,	C. E.,	Philadelphia	12th and Wagner Ave.
Beuttenmuller, Rudolf William,	C. E.,	Logan,	4513 Chester Ave.
Bilyeu, William Frazier,	C. E.,	Philadelphia,	3314 Woodland Ave.
Blaisdell, Ferren Frank,	Wh.,	Red Bank, N. J.,	3431 Spg. Garden St.
Blank, Henry Valentine,	C. E.,	Philadelphia,	Dorm. 24 Morris.
Bond, Walter Loucks,	Wh.,	York,	[239 W. Rittenhouse St.]
Bradbury, Henry Wilson,	M. E.,	Germantown,	Dorm. 224 McKean.
Breitinger, Frederick William,	A.,	do	Dorm. 32 Bodine.
Brimmer, George Hollis,	Wh.,	Brewer, Me.,	Dorm. 367 Hopkinson
Bristol, Raymond Walcott,	Arch.,	Philadelphia,	4300 Market St.
Broadbelt, Wilford Fiske,	C. E.,	do.	1507 S. Broad St.
Broadwell, Howard,	E. E.,	do.	927 N. 42d St.
Brokaw, Walter Samuel,	Wh.,	do.	116 S. 33d St.
Brook, John Andrews,	C. E.,	Ardmore.	300 S. 36th St.
Brown, Eugene Baker,	C. E.,	Coatesville,	Dorm. 31 Bodine.
Brown, Everett Henry, Jr.,	A.,	Philadelphia,	
Brown, Harold Stacy.	Wh.,	Hudson, Mass.,	

\* Note.—Where no State is named after residence, Pennsylvania is meant.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Brown, John Henry, Jr.,	C. E..	Philadelphia,	17 S. 34th St.
Bryant, Arthur Justin,	Wh.,	Middleboro, Mass.,	Dorm. 21 Bishop White.
Buseck, Fred Louis,	Wh.,	Erie,	Dorm. 358 Craig.
Cadwallader, Charles Girton, Jr.,	M. E.,	Philadelphia,	430 S. 45th St.
Caldwell, Edward Baker, Jr.,	Arch.,	Mansfield, Ohio,	3614 Walnut St.
Callender, Clarence Newell,	Wh.,	Scranton,	3604 Walnut St.
Callow, Edwin Bert,	C. E..	Lansdowne.	
Chamberlain, Lewis Boyer,	C. E..	Fox Chase.	
Cheston, Radcliffe, Jr.,	A.,	Philadelphia,	3328 Walnut St.
Clay, William Thomas,	C. E..	do.	2431 Fairmount Ave.
Cleaver, Horace Jones,	C. E.,	Ardmore,	[125 Argyle Road.]
Clowes, George Archer,	A.,	Philadelphia,	1517 Venango St.
Coffman, Charles James, Jr.,	Ch.,	Phoenixville,	38 N. 36th St.
Cole, Charles James, Jr.,	A.,	Elkins Park.	
Coles, Walter Francis,	A.,	Philadelphia,	2139 N. Woodstock St.
Cooke, Charles Boker, Jr.,	M. E.,	Germantown,	[5343 Wayne Ave.]
Corkran, Sewell Hopkins,	Wh.,	Media,	3533 Locust St.
Cox, Charles Howard,	Ch.,	Bridgeton, N. J.,	3709 Locust St.
Crowell, Abraham Albert,	C. E.,	Philadelphia,	636 N. 6th St.
Curtis, John Pollock,	Arch.,	Abilene, Tex.,	Dorm. 451 N.Y. Alumni.
Dean, Harry Clinton,	M. E.,	Philadelphia,	3542 N. Broad St.
Dering, Edward Mulford, Jr.,	E. E.,	do.	4155 Leidy Ave.
Dickson, Thomas Sinclair,	A.,	East Orange, N. J.,	Dorm. 123 McKean.
Dietz, Frederick Charles,	A.,	Philadelphia,	2139 N. 32d St.
Dise, Joseph Ivan,	Arch.,	Glen Rock,	Dorm. 419 McKean.
Donnelly, Augustine Leo,	E. E.,	Philadelphia,	1521 Wallace St.
Doran, Warner Erwin,	A.,	do.	3453 Woodland Ave.
Drefs, Arthur George,	Wh.,	Buffalo, N. Y.,	Dorm. 396 N.Y. Alumni.
Dunbar, Louis Smith,	Arch.,	Bloomfield, N. J.,	Dorm. 50 Bodine.
Earnshaw, John Benjamin,	A.,	Washington, D. C.,	Dorm. 353 Class of '87.
Eggers, Herman Diederich, Jr.,	Ch.,	Louisville, Ky.,	Dorm. 226 Baldwin.
Farenwald, John,	C. E.,	Roslyn.	
Fegley, John Thomas,	Ch.,	Philadelphia,	1423 Ontario St.
Felton, John Garret,	E. E.,	do.	3316 Walnut St.
Fetter, Theodore Search,	Arch.,	do.	1931 N. 31st St.
Fike, John Henry,	A.,	Somerset,	3714 Locust St.
Fogel, Isaac,	C. E.,	Philadelphia,	216 N. 2d St.
Folger, Wayne Harrison,	Wh.,	Lockport, N. Y.,	Dorm. 129 Craig.
Foust, Clement Edgar,	A.,	North Wales.	
Freedley, Paul,	M. E.,	Overbrook.	3312 Walnut St.
Freund, Henry Herman, Jr.,	A.,	Philadelphia,	827 N. 63d St.
Fulton, Frank Goldsworthy,	A.,	do.	1017 S. 19th St.
Garrett, Frederick Alexander,	A.,	do.	232 Wilton St.
Garrison, Leon Benjamin,	C. E.,	do.	3537 Locust St.
Geyelin, Antony Laussat,	A.,	Villa Nova,	1541 Spg. Garden St.
Gilbert, John Joseph,	A.,	Philadelphia,	Norristown.
Gill, Calvert Burke,	E. E.,	Baltimore, Md.,	Dorm. 47 Morgan.
Gill, Kenneth Eugene,	C. E.,	Greensburg,	26th and Lombard
Gilson, Robert Martin,	A.,	Wilkinsburg,	Sts.
Grantham, Herbert Albert,	A.,	Marshallton, Del.	

## STUDENTS.

Name.	Course	Residence.	City Address.
Greenlee, Arden Dean,	A.,	Mansfield, Ohio,	125 N. 19th St.
Gretz, William, Jr.,	M. E.,	Philadelphia,	1540 N. Franklin St.
Griscom, Walter Stewart,	A.,	do.	3622 Baring St.
Grove, William Garrett,	C. E.,	do.	1943 N. 13th St.
Grunwell, John Roscoe,	Arch.,	Washington, D. C.,	Dorm. 220 McKean.
Haldeman, Clifford Lloyd,	E. E.,	Philadelphia,	2332 N. Smedley St.
Haldeman, Guy Kammerer,	C. E.,	do.	3213 Hamilton St.
Hammond, Harry Parker,	C. E.,	Atlantic Highlands, N. J.,	527 S. 41st St.
Hance, Wallace Eugene,	Arch.,	Boothwyn,	3604 Locust St.
Hansell, Howard Forde, Jr.,	A.,	Philadelphia,	3337 Walnut St.
Hanson, Wilmer Crooks,	E. E.,	do.	5635 Market St.
Haring, Arthur Winfield,	M. E.,	do.	642 Diamond St.
Harned, Herbert Spencer,	A.,	do.	307 S. 39th St.
Harr, Tobias Cope,	A.,	Perkasie,	3236 Sansom St.
Harris, Donald Knapp,	Wh.,	Duluth, Minn.,	Dorm. 361 Baird.
Harvey, Edmund Newton,	B.,	Germantown,	[236 W. Horter St.]
Haupt, Lewis Herman,	M. E.,	Philadelphia,	107 N. 35th St.
Hellyer, Harold,	C. E.,	Penn's Park,	3316 Walnut St.
Hess, James Milton, Jr.,	A.,	Haddonfield, N. J.	
Hill, Horace Greenwood, Jr.,	M. E.,	Philadelphia,	3419 Hamilton St.
Hippee, George Polk,	Wh.,	Des Moines, Iowa,	3621 Locust St.
Hitchens, William Frank,	Arch.,	Philadelphia,	42 N. 60th St.
Hitner, William Perry Eveland,	M. E.,	do.	1213 W. Lehigh Ave.
Hoffecker, Joseph Van Gasken,	Arch.,	do.	3108 Ridge Ave.
Hofmann, Arthur A.,	Wh.,	Pittsburg,	3745 Spruce St.
Hokanson, Horace Milton,	Arch.,	St. Paul, Minn.,	3319 Spg. Garden St.
Hollowbush, Frank Abercrombie,	A.,	Bala,	Dorm. 31 Bishop White.
Hoover, Carl Hubbard,	A.,	Overbrook,	[879 Highland Ave.]
Hovey, Walter Freeman,	E. E.,	East Orange, N. J.,	2039 Locust St.
Howie, Kenneth,	M. E.,	Mt. Vernon, N. Y.,	Dorm. 211 Franklin.
Hsu, Ching Fu,	Wh.,	Sung-Kiang, China,	3717 Spruce St.
Hu, Hung-yin,	Wh.,	Wusih, China,	3606 Locust St.
Huckles, Allan Irving,	A.,	Philadelphia,	4127 Girard Ave.
Huggins, John Robinson,	A.,	do.	5000 Woodland Ave.
Hughes, Edward Morris,	Ch.,	Tredyffrin.	
Hughes, William Harold,	A.,	Philadelphia,	4006 Pine St.
*Husik, Maurice,	A.,	do.	3232 Arlington St.
Hutt, Robert Bines Woodward,	A.,	do.	1908 Fairmount Ave.
Imbs, Thomas Francis,	Arch.,	St. Louis, Mo.,	Dorm. 49 Rodney.
Jenne, Lyle Loren,	Ch. E.,	Germantown,	[120 E. Washington Lane.]
Johnson, William Keating.	A.,	Rosemont,	3537 Locust St.
Jones, William Dowlin,	A.,	Chester,	[25 E. 5th St.]
Keenan, Walter Francis, Jr.,	M. E.,	Montclair, N. J.,	3533 Locust St.
Keil, Raymond Humphrey,	E. E.,	Philadelphia,	4221 Viola St.
Keinath, Charles,	Wh.,	do.	229 S. 9th St.
Keiter, Aaron Charles Robert,	A.,	Bethlehem,	3711 Walnut St.
Kern, Robert Alexander,	Wh.,	Knoxville, Tenn.,	Dorm. 13 Bodine.

\* Absent on leave, 1908-09.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Kervick, Francis William,	Arch.,	Millers Falls, Mass.,	3416 Sansom St.
Kiefaber, Arthur Blaine,	Wh.,	Philadelphia,	2229 W. Tioga St.
Kiesewetter, Otto Bismarck,	Wh.,	Germantown,	[48 W. Johnson St.]
Kitson, Arthur, Jr.,	Wh.,	do.	[213 W. Upsal St.]
Klaer, Henry Jacob,	Ch. E.,	Milford,	3400 Walnut St.
Klebsattel, Christian Frederick,	A.,	Buffalo, N. Y.,	5218 Rinehart St.
Klotz, John Rhoderic MacPherson,	Ch.,	Newark, N. J.,	Dorm. 167 Hopkinson.
Kofke, Harry Conrad,	Ch.,	Philadelphia,	2700 Ash St.
Koyl, George Simpson,	Arch.,	Denver, Col.,	Dorm. 387 Lippincott
Krantz, George Buckley, Jr.,	A.,	Philadelphia,	1937 E. Orleans St.
Kyle, Elmer Langham,	E. E.,	do.	3131 Frankford Ave.
Lafean, Leroy Krone,	Wh.,	York,	Dorm. 13 Bishop White.
Laird, Robert Fisher,	Ch.,	Germantown,	[229 E. Logan St.]
Landé, Stanislaw Lesncjusz,	Wh.,	Warsaw, Poland,	Dorm. 16 Morris.
Laurie, Frank Alan,	A.,	Corry,	218 S. 37th St.
Lee, John Kidd,	A.,	Philadelphia,	3800 Chestnut St.
Levy, Augustus,	Ch.,	Elmira, N. Y.,	3445 Walnut St.
Lewis, George Draper,	A.,	Chestnut Hill,	3337 Walnut St.
Lin, Tsae Tsin,	Wh.,	Foochow, China,	3707 Woodland Ave.
Lohr, William Shannon,	C. E.,	Philadelphia,	1716 Baily St.
Lupin, Edward Emanuel,	A.,	do.	1247 S. 7th St.
McCormick, George Wylie,	C. E.,	do.	1943 N. 11th St.
McCradden, Andrew John, Jr.,	C. E.,	do.	2417 Columbia Ave.
McEwan, William George, Jr.,	E. E.,	do.	2134 S. Broad St.
McManus, Charles Joseph,	Wh.,	do.	1404 N. 15th St.
Manwaring, Roy Artimus,	Wh.,	do.	2033 N. 33d St.
Marsh, Harold Pinkham,	Wh.,	Bangor, Me.,	Dorm. 32 Bodine.
Matt, Calman David,	A.,	Philadelphia,	526 Queen St.
Matthews, John Vincent,	E. E.,	do.	1313 Lehigh Ave.
Meily, John James,	Wh.,	Allentown,	Dorm. 57 Rodney.
Merrell, William,	Ch.,	Philadelphia,	2950 Frankford Ave.
Merrick, Rodney King,	A.,	do.	Dorm. 111 Franklin.
Messinger, William,	E. E.,	do.	457 N. 3d St.
Metz, Louis Charles,	E. E.,	do.	2059 Franklin St.
Meyer, Jerome Kaufman,	E. E.,	Baltimore, Md.,	3340 Walnut St.
Miller, Arthur Hagen,	A.,	Philadelphia,	317 Green St.
Miller, Richard Gladden,	M. E.,	do.	Dorm. 56 E. F. Smith.
Mitchell, John Howard, Jr.,	M. E.,	do.	3316 Race St.
Moore, Robert DeWitt,	C. E.,	Ashbourne,	3316 Walnut St.
Moorshead, Albert Henry,	C. E.,	Lansdowne.	5244 Walton Ave.
Moran, William Cuthbert,	M. E.,	Philadelphia,	3705 Walnut St.
Morgan, William Richard,	C. E.,	Passaic, N. J.,	4320 Manayunk Ave.
Moscrip, William Henry,	C. E.,	Philadelphia,	[185 Weaver St.]
Moxey, John Gray,	M. E.,	Mt. Airy,	1501 Poplar St.
Müller, Henry John,	C. E.,	Philadelphia,	303 S. 39th St.
Murphy, Walter Bispham,	M. E.,	do.	[804 Highland Ave.]
Musser, John,	A.,	Overbrook,	3533 Locust St.
Myers, Joseph S.,	C. E.,	Philadelphia,	300 S. 36th St.
Neff, Morton Gibbons,	Wh.,	Narberth,	Dorm. 35 Bodine,
Netoffsky, William,	Ch.,	Louisville, Ky.,	3730 Lancaster Ave.
Newell, Charles William,	C. E.,	Philadelphia,	

## STUDENTS.

Name.	Course.	Residence.	City Address.
Newell, Palmer Farragut,	C. E.,	Buffalo, N. Y.,	Dorm. 354 Class of '87.
Nicholas, Isaac Alonzo,	Ch.,	Doylestown,	[630 W. Phil-Ellena St.]
Null, Harold Miller,	A.,	Germantown,	3614 Walnut St.
Ochs, Robert Emmanuel,	Arch.,	Allentown,	1137 N. Union St.
Oliensis, Morris,	A.,	Philadelphia,	831 N. Broad St.
Ott, Lambert, Jr.,	Wh.,	do.	3533 Locust St.
Patterson, John Douglas,	M. E.,	Wilmington, Del.,	1239 N. 7th St.
Perzin, Leo,	C. E.,	Kishineff, Russia,	3745 Spruce St.
Peterman, Claude Lewis,	Wh.,	York,	Dorm. 53 E. F. Smith.
Pettit, Mortlock S.,	Wh.,	New York City, N.Y.,	The Tracy, 36th and
Pfeil, Walter George,	A.,	Philadelphia,	Chestnut Sts.
Pickles, John Frederick,	M. E.,	Buckland, Conn.,	3316 Walnut St.
Pierce, Raymond Chapman,	M. E.,	Hornell, N. Y.,	Dorm. 30 Morris.
Platt, Haviland Hull,	E. E.,	Wallingford,	114 S. 22d St.
Plumly, Francis Lasher,	Wh.,	Philadelphia,	Dorm. 31 Morris.
Putnam, Karl Scott,	Arch.,	Northampton, Mass.,	[4330 Pechin St.]
Radcliff, Robert Llewellyn,	M. E.,	Roxborough,	300 S. 36th St.
Register, Henry Bartol,	Arch.,	Haverford,	Dorm. 103 Brooks.
Reichert, Edward Tyson, Jr.,	E. E.,	Philadelphia,	300 S. 36th St.
Roberts, William Wallace,	A.,	do.	Dorm. 120 McKean.
Robinette, Edward Burton,	A.,	Everett,	300 S. 36th St.
Rogers, Edmund Henkels,	Wh.,	Wyncote,	3400 Walnut St.
†Rogers, Francis Churchill,	A.,	Camden, N. J.,	Dorm. 206 Leidy.
Rollinson, James Wells,	Arch.,	Buffalo, N. Y.,	Dorm. 11 Morris.
Roop, James Clawson,	E. E.,	Upland,	1513 S. 6th St.
Rosin, Joseph,	Ch.,	Minsk, Russia,	[115 W. Washington Lane.]
Sauter, William Rodgers,	C. E.,	Germantown,	4824 Mervine St.
Schaefer, Charles Henry,	C. E.,	Logan,	3529 Locust St.
Scheling, George Louis,	Arch.,	Brooklyn, N. Y.,	[1026 Broadway.]
Schneeberg, Bertrand,	Ch.,	Camden, N. J.,	4201 Pine St.
Schoch, Charles Leonard,	E. E.,	Philadelphia,	1435 Arch St.
Schrenk, Frank Henry,	Wh.,	do.	1925 Spruce St.
Scott, Charles Henry, Jr.,	A.,	do.	Dorm. 39 Bodine.
Schuhmann, George Linder,	M. E.,	Reading,	300 S. 36th St.
Scully, Charles Alison,	A.,	Philadelphia,	2345 N. Lambert St.
*Seaton, Hartley Hawley,	Arch.,	Jacksonville, Fla.	2345 N. Lambert St.
Senior, Harold Benedict,	Arch.,	Bethel, Conn.,	Dorm. 35 Coxe.
Sessler, Grover Cleveland,	C. E.,	Philadelphia,	3529 Locust St.
Shaw, John Wilson,	Wh.,	Pittsburg,	307 S. 39th St.
Sheble, Warren,	E. E.,	Philadelphia,	113 S. 37th St.
Shoemaker, Dudley,	M. E.,	do.	113 S. 37th St.
Sloan, Paul Milliken,	A.,	Pittsburg,	1228 S. 51st St.
Slotter, Raymond Maurice,	Wh.,	Philadelphia,	18 N. 38th St.
Smythe, J. Henry, Jr.,	Wh.,	do.	The Gladstone, 11th
Snook, Ward H.,	M. E.,	do.	and Pine Sts.
Spindler, Frank,	Ch.,	do.	

† Absent on leave, 1908-09.

\* Absent on leave, first term.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Steen, John Dee,	A.,	South Vineland, N. J.,	Dorm. 453 N. Y. Alumni
Stratton, Leon Dupree,	Ch.,	Paulsboro, N. J.,	Dorm. 24 Bodine.
Strauss, Percival Smith,	A.,	Philadelphia,	3300 Haverford Ave.
Stuart, Milton Caleb,	M. E.,	Berwick,	Dorm. 51 Morris.
Subers, Harry Wallace,	Ch.,	Philadelphia,	1316 Allegheny Ave.
Sumner, John Newman,	E. E.,	Moorestown, N. J.,	Dorm. 40 Morgan.
Swartz, Jesse Franklin,	A.,	Spring Forge,	3733 Spruce St.
Taylor, Charles Carter,	A.,	Philadelphia,	4105 Walnut St.
Townsend, Stockton,	A.,	Bryn Mawr,	3328 Walnut St.
Trexler, Thompson Arthur,	E. E.,	Sunbury,	
Tsao Chin Kien,	Wh.,	Shanghai, China,	124 S. 34th St.
Tung, Ytian Ch'un,	Wh.,	Yangchow, China,	3330 Walnut St.
Tyack, Robert Mildrum,	M. E.,	Reading,	Dorm. 52 Coxe.
Tyson, Frank Doughten,	A.,	Philadelphia,	2211 N. 22d St.
Vail, Ernest Macdowell,	A.,	Germantown,	[125 W. Chelten Ave.]
Walling, Ritner Kelsey,	C. E.,	Philadelphia,	3705 Walnut St.
Walliser, Emile Rivoir,	A.,	Roxborough,	[531 Hermitage St.]
Wanner, Henry Eckert,	Ch.,	York,	Dorm. 27 Morris.
*Warnick, Henry Clay,	A.,	Philadelphia,	607 N. 33d St.
Warwick, Charles Laurence,	C. E.,	do.	6023 Kershaw St.
Wasilewski, Casimir Franciszek,	Wh.,	Warsaw, Poland,	Dorm. 116 Foerderer
Watkins, Matthew Kear, Jr.,	Wh.,	Mt. Carmel,	Dorm. 43 Memorial.
Watt, James Cruickshank,	E. E.,	Philadelphia,	6420 Sherwood Rd.
Webster, Maurice Anderson,	C. E.,	do.	3533 Locust St.
Weimer, Peter Leibrandt,	M. E.,	Lebanon,	Dorm. 21 Morris.
Weiss, Charles Robert,	M. E.,	Philadelphia,	3529 Locust St.
Wendel, Harry Forrest,	Wh.,	Milwaukee, Wis.,	Dorm. 233 Craig.
Westcott, Bayse Newcomb,	E. E.,	Philadelphia,	Dorm. 11 Morgan.
White, Lucius Read, Jr.,	Arch.,	Baltimore, Md.,	Dorm. 377 Hopkinson.
White, Maurice Seal,	M. E.,	Philadelphia,	3417 Race St.
Wilbraham, Rossiter William,	E. E.,	do.	3305 Walnut St.
Williams, John Archibald,	Wh.,	Scranton,	3614 Walnut St.
Wills, Louis Albert,	Ch.,	Germantown,	[5537 Germantown Av.]
Wilson, Ray Clifford,	C. E.,	Manor,	3713 Locust St.
Winbigler, Cecil Meridith,	Arch.,	Washington, D. C.,	113 S. 37th St.
Woerner, Albert Henry,	C. E.,	Roxborough,	[4415 Manayunk Ave.]
Wolstenholme, Hollis,	Wh.,	Philadelphia,	3400 Walnut St.
Woodroffe, William Philipps,	M. E.,	Barbados, B. W. I.,	31 W. Johnson St., Germantown.
Worden, Arthur Morley,	Wh.,	Batavia, N. Y.,	Dorm. 141 Lippincott.
Work, Philip,	A.,	Pueblo, Colorado,	Dorm. 307 Brooks.
Wright, Arnold Ainley,	M. E.,	Philadelphia,	1233 S. Paxon St.
Wright, Spencer Disston, Jr.,	A.,	do.	3400 Walnut St.
Yerger, William Clarence,	Ch. E.,	do.	642 N. 52d St.
Yerger, Wilson Stearly,	Ch. E.,	Germantown,	[113 W. Upsilon St.]
Young, Chinson,	Wh.,	Soochow, China,	3447 Woodland Ave.
Young, Don Allen,	Ch.,	Wadsworth, Ohio,	Dorm. 137 Hopkinson.
Zeckwer, Jamard Richard,	M. E.,	Philadelphia,	106 N. 34th St.
Zieber, Edward Herman,	M. E.,	do.	4806 Springfield Ave.
Zinsser, Harry Frederick,	A.,	Pittsburg,	Dorm. 145 Carruth.

\*Absent on leave, first term.

## JUNIORS.

Name.	Course.	Residence.	City Address.
Aaron, Levi Frank,	A.,	Johnstown,	Dorm. 11 E. F. Smith.
Adams, John Clinton,	A.,	Weedsport, N. Y.,	Dorm. 341 McKean.
Aigner, Martin, 3d,	A.,	Franklin,	Chester.
Arnold, Ben L.,	Wh.,	Kittanning,	Dorm. 254 N.Y. Alumni.
Bacon, Francis Rogers,	Arch.,	Haddonfield, N. J.	
Battle, John Rome,	M. E.,	Winchester, Va.,	226 S. 38th St.
Beekley, Catharine Wetherill,	B.,	Media.	
Belcher, Paul William,	M. E.,	Salt Lake City, Utah,	3435 Walnut St.
Berkowitz, Max Edward,	Wh.,	Philadelphia,	1823 N. 33d St.
Binder, Gottfried Henry,	Ch.,	do.	2328 Poplar St.
Binswanger, Jacob Goldstein,	Ch.,	do.	1619 N. 16th St.
Birdsall, Wilfred T.,	E. E.,	do.	1723 Mt. Vernon St.
Blakeley, William Sample, Jr.,	Wh.,	Chester,	3621 Locust St.
Blish, Herbert Harger,	Wh.,	Dubuque, Iowa,	Dorm. 32 Memorial.
Boarman, LeRoy Harrison,	C. E.,	Baltimore, Md.,	408 N. Preston St.
Boyd, John Leo,	Wh.,	Philadelphia,	5209 Locust St.
Boyd, Samuel Harold,	A.,	Hensel,	216 DeKalb Sq.
Braddock, Harry Phillips,	Wh.,	Williamsport,	3533 Locust St.
Bradford, James Frederick,	M. E.,	Elkins Park,	307 S. 39th St.
Brandes, Jerome,	M. E.,	Philadelphia,	1727 N. 33d St.
Brooks, Walter Wimpenny,	E. E.,	do.	The Normandie, 36th and Chestnut
Brown, Joseph Jeans,	A.,	do.	300 S. 36th St.
Brunswick, Raymond,	Wh.,	do.	1508 Girard Ave.
Bryan, Marcus Kay,	M. E.,	Louisville, Ky.,	Dorm. 42 Morris.
Buchholz, Carl Daniel,	E. E.,	Philadelphia,	1937 N. 6th St.
Bullitt, John Christian, 3d,	A.,	do.	222 W. Rittenhouse Sq.
Burns, Robe t Bruce, Jr.,	A.,	do.	300 S. 36th St.
Campbell, Harry Latshaw,	A.,	Pittsburg,	Dorm. 239 Hopkinson.
Carey, Theodore Campbell,	Wh.,	Glenside.	
Chandler, William,	M. E.,	Sharon Hill,	[118 Barker Ave.]
Chapman, William Clifford,	M. E.,	Germantown,	[5520 Wayne Ave.]
Chen, Kwang Pu,	Wh.,	Chinkiang, China,	Dorm. 23 Morris.
Chu, Tsu Hung,	Wh.,	Shanghai, China,	Dorm. 57 E. F. Smith.
Chu, Yu Ying,	Wh.,	Tientsin, China,	Dorm. 47 Rodney.
*Cogan, Clement James,	E. E.,	Bayonne, N. J.,	[68 Avenue C.]
Cookman, Earl Clarendon,	A.,	Germantown,	[335 School Lane.]
*Cope, Robert Harper,	M. E.,	Media.	
Cornwell, Harry King,	Wh.,	Washington, D. C.,	3705 Walnut St.
Costello, John Lawrence,	C. E.,	Philadelphia,	849 Corinthian Ave.
Cotton, Harold Alonzo,	C. E.,	Ocean City, N. J.,	Dorm. 42 Coxe.
Cowles, Henry Carleton, Jr.,	E. E.,	Darby,	[1102 Main St.]
Craner, Henry Christian,	A.,	Philadelphia,	3816 Spruce St.
Crooks, Thomas,	Wh.,	South Williamsport,	300 S. 36th St.
Crosby, Edward Lewis,	M. E.,	Pittsburg,	Dorm. 42 Morris.
Cowell, Francis Jay,	Wh.,	Philadelphia,	225 S. 41st St.
Daily, Thomas Lanigan,	Wh.,	Fort Smith, Ark.,	Dorm. 327 Franklin.

\* Absent on leave, 1908-09.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Dalton, J. Morris,	A.,	Germantown,	[126 E. Washington Lane.]
Dean, John Thornton,	C. E.,	Chestnut Hill,	[130 Highland Ave.]
Dechant, Frederick Hagman,	C. E.,	Reading,	1839 Stiles St.
de Mey, Edouard Jean Bernard,	C. E.,	Ambler,	2122 N. 18th St.
Dennis, Raymond Miller,	C. E.,	Downington,	7005 Woodland Ave.
Diverty, Marshall Hand,	A.,	Woodbury, N. J.,	[38 Cooper St.]
Doig, Rolland Barkley,	A.,	Greenwich, N. Y.,	212 S. 37th St.
Dolman, John, Jr.,	A.,	Philadelphia,	3219 Clifford St.
Doolittle, Harold,	M. E.,	Upper Darby.	
Dorwarth, Edward John,	Wh.,	Philadelphia,	300 N. 5th St.
Dougherty, John, Jr.,	Wh.,	Logan, Ohio,	3613 Locust St.
Dox, Elmer Allan,	A.,	Philadelphia,	3236 N. 16th St.
Drefs, Charles A., Jr.,	Wh.,	Buffalo, N. Y.,	Dorm. 396 N.Y.Alumni.
Du Bois, Thomas Randall,	E. E.,	Philadelphia,	5125 Spruce St.
du Pont, E. Paul,	A.,	Montchanin, Del..	3537 Locust St.
Durgin, Francis Lawrence, Jr.,	C. E.,	Palmyra, N. J.	2040 N. 19th St.
Eagle, Stephen Harry,	E. E.,	Philadelphia,	
Earle, Ralph Pennock,	E. E.,	Primos.	
Emhardt, John Charles,	Ch.,	Germantown,	[32 Harvey St.]
Erck, George Henry,	Ch. E.,	Philadelphia,	251 S. 13th St.
Erikson, Carl Antony,	Arch.,	Chicago, Ill.,	Dorm. 502 Baldwin.
Erichson, William Bowers,	C. E.,	Philadelphia,	1848 N. 11th St.
Ewing, Harvey M.,	A.,	Coraopolis,	Dorm. 31 Rodney.
Eynon, Howard Blaine,	Ch. E.,	Scranton,	Dorm. 32 Morgan.
Fenhagen, Frank Donald,	M. E.,	Baltimore, Md.,	Dorm. 357 Craig.
Ferguson, James Pierce,	C. E.,	Philadelphia,	3251 Chestnut St.
Fisher, Jacob Calvin,	Wh.,	Norristown,	Dorm. 48 Bodine.
Fisher, Walter John,	Wh.,	Buffalo, N. Y.,	Dorm. 394 N.Y.Alumni.
Fitzmaurice, Edmund Joseph,	C. E.,	Philadelphia,	1508 N. Stillman St.
Fleming, Wilmot,	M. E.,	Middleburg, N. C.,	3261 Woodland Ave.
Fletcher, James Gordon,	E. E.,	Philadelphia,	617 N. 32d St.
Foerster, Oscar Erwin,	Wh.,	Milwaukee, Wis.,	3621 Locust St.
Foote, Hugh Schuyler,	Ch.,	SharonSprings,N.Y.,	3340 Chestnut St.
Foster, Herbert Gray,	A.,	Jenkintown.	
*Freeman, Addison Barnpfylde,	Ch. E.,	Port Deposit, Md.	
Gailey, James Herbert,	Arch.,	Philadelphia,	1513 N. Franklin St.
Galloway, James Wesley,	M. E.,	do.	4075 Market St.
Garrett, Robert Edwin,	M. E.,	Haddon Heights,	268 S. 38th St.
		N. J.,	
Gerecke, John Harrison,	C. E.,	Sag Harbor, N. Y.,	Dorm. 381 Lippincott.
Gibson, Henry Clay,	A.,	Philadelphia,	2001 Walnut St.
Gideon, Roy Morrow,	M. E.,	do.	4518 Osage Ave.
Gilbert, William Jerome,	C. E.,	do.	2027 Columbia Ave.
Gillilan, Archer Butler,	A.,	Washington, D. C.,	Dorm. 42 Morgan.
Gillilan, Seabury Columba,	A.,	do.	Dorm. 46 Morgan.
Gillen, Joseph John,	C. E.,	Philadelphia,	231 N. 21st St.
Gillingham, Charles Arthur,	Ch. E.,	do.	1226 N. Franklin St.
Goldsmith, Malcolm,	A.,	Pittsburg,	Dorm. 10 Coxe.

\* Absent on leave, 1908-09.

Name.	Course.	Residence.	City Address.
Gossling, Walter Earle,	C. E.,	Philadelphia,	1854 N. Park Ave.
Gray, Frederick James,	A.,	do.	431 S. 43d St.
Grear, Harry Adler,	M. E.,	Sharon Hill.	213 S. 33d St.
Greul, Armon Rogers,	M. E.,	Oak Lane,	3616 Spg. Garden St.
Griffin, David Vincent,	C. E.,	Philadelphia,	[336 W. Miner St.]
Griffiths, William Colbert	A.,	West Chester,	809 Preston St.
Gross, Charles Victor,	Ch.,	Philadelphia,	3533 Locust St.
Haney, J. Renton,	Wh.,	do.	2028 S. 18th St.
Hans, John Nevin,	Ch.,	do.	[508 Locust Ave.]
Harbeson, John Frederick,	Arch.,	Germantown,	Dorm. 35 Bishop White.
Harvey, George Lewis, Jr.,	C. E.,	Secane,	1587 N. 52d St.
Harvey, Herman Hercules,	Wh.,	Philadelphia,	3745 Spruce St.
Haubner, Oscar Valentine,	Wh.,	Reading,	2123 Locust St.
Haydock, Roger,	C. E.,	Ridley Park,	3263 Locust St.
Henry, James Carlton,	C. E.,	Woodbury, N. J.	3312 Walnut St..
Heritage, Jacob Paul,	Wh.,	Vineland, N. J.,	938 S. 49th St.
Herman, Joseph Leo,	Ch.,	Augusta, Ga.,	122 S. 33d St.
Hess, Daniel Joseph,	E. E.,	Philadelphia,	4511 Locust St.
Hickson, Elizabeth Cathcart,	B.,	Gwynedd Valley.	4057 Spruce St.
Hiller, Fred Ludolph,	Ch.,	Honesdale,	121 S. 34th St.
Hitchcock, Francis Bennett,	A.,	Philadelphia,	12 S. 44th St.
Hoffman, Edward Fenno, Jr.,	Arch.,	do.	7917 Eastwick Ave.
Homer, Maurice Bedell,	A.,	Lansdowne.	Dorm. 303 Brooks.
Ho, Lin,	Wh.,	Poochow, China,	3709 Woodland Ave.
*Horan, John Collins Joseph,	E. E.,	Philadelphia,	221 S. 36th St.
Horn, Max,	E. E.,	do.	3533 Locust St.
Horty, John Francis,	A.,	Wilmington, Del.,	5261 Jefferson St.
Hughes, Fred Albion,	A.,	Scranton,	Dorm. 22 Morris.
Ing, Tsu En,	Wh.,	Soochow, China,	Dorm. 351 Baldwin.
Irving, James,	Wh.,	Chester,	900 N. 41st St.
*Jackson, Newton,	E. E.,	Philadelphia,	3705 Walnut St.
Joyce, Walter Mortland,	C. E.,	Palmyra, N. J.	Dorm. 455 N.Y. Alumni.
Katz, John A.,	M. E.,	York,	3533 Locust St.
Keefer, William Wesley, 2d,	Arch.,	Lansdowne.	1831 Chestnut St.
Keller, Christoph,	A.,	Berwyn,	3404 Market St.
Kelley, Francis James,	A.,	Philadelphia,	Dorm. 382 Lippincott.
Kennedy, George Henry, Jr.,	M. E.,	Washington, D. C.,	Dorm. 12 Morris.
Kirchner, Henry Paul,	M. E.,	Buffalo, N. Y.,	The Tracy, 36th and
Knapp, William Bruce,	Wh.,	Stoneham, Mass.,	Chestnut Sts.
Knerr, Horace Calvin,	E. E.,	Primos,	
Knorr, Charles,	M. E.,	Fox Chase.	
Kohn, Joseph,	C. E.,	Trenton, N. J..	
Koplin, Alex.,	Wh.,	Atlanta, Ga.,	
Kraus, William Henry,	Wh.,	Baltimore, Md.,	
Lamborn, John Paul,	M. E.,	Longport, N. J.,	
Lange, David Christopher,	Arch.,	Audubon, N. J.	
Latimer, John,	M. E.,	Philadelphia,	2551 Cedar St.
Lawrence, Charles Kennedy, Jr.,	Arch.,	Savannah, Ga.,	113 S. 37th St.

\*Absent on leave, 1908-09.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Lay, Donald McLeod,	A.,	Batavia, N. Y.,	4015 Pine St.
Legge, Henry Critchley,	M. E.,	Philadelphia,	N. 52d St. and City Av.
Lewis, Francis Albert, 3d,	A.,	do.	2207 St. James St.
Lex, Barclay,	A.,	do.	2227 Locust St.
Liedtke, Hugo Frank,	M. E.,	do.	129 N. 4th St.
Linhart, George Augustus,	Ch.,	Austria,	Dorm. 50 Rodney.
Lindsey, James David,	Arch.,	Philadelphia,	5120 Locust St.
Little, Wilson Vaughan,	A.,	Pittsburg,	Dorm. 47 Bodine.
Liu, Ching-Shan,	Wh.,	Tientsin, China,	3609 Locust St.
MacFarland, George Arthur,	Wh.,	Philadelphia,	761 S. 16th St.
MacFarland, Walter Griffith, Jr.,	M. E.,	do.	Dorm. 245 Provost Smith.
McCreery, Samuel, 2d,	Wh.,	Flushing, N. Y.,	23 S. 34th St.
McCutcheon, Morton.	A.,	Philadelphia,	3533 Locust St.
McDonald, Thomas A.,	A.,	Utica, N. Y.,	3614 Walnut St.
McNichol, Harry Aloysius,	C. E.,	Philadelphia,	222 N. 19th St.
Maguire, John Griffith,	E. E.,	Wayne.	1511 N. 17th St.
Mallon, George Joseph,	E. E.,	Philadelphia,	1615 N. 55th St.
Marbaker, Edward Ellsworth,	Ch.,	do.	3537 Locust St.
Maris, Henry M.,	A.,	do.	2342 S. Beulah St.
Mark, Max Milton,	M. E.,	do.	Dorm. 45 Bishop White.
Marriott, Arthur William,	C. E.,	Scranton,	1718 Pine St.
Marshall, John Theodore,	Ch.,	Philadelphia,	[320 Pennington Ave.]
Martindale, William Henry Atkinson,	Ch.,	Trenton, N. J.,	
*Masse, Louis Albert,	M. E.,	Philadelphia,	659 N. 52d St.
Maxwell, Maurice Feger,	Arch.,	Pottstown,	Dorm. 22 E. F. Smith.
Mayer, T. Otto Francis,	C. E.,	Philadelphia,	619 N. 6th St.
Mechling, William Hubbs,	Arch.,	Germantown,	[Wingohocking Heights.]
Megargee, Henry Préaut,	E. E.,	Wayne.	
Mehring, Albert Jacob,	A.,	Harrisburg,	3725 Spruce St.
Meislahn, Carl Walter,	Arch.,	Baltimore, Md.,	Dorm. 379 Lippincott.
Melnik, Samuel Donald,	C. E.,	Camden, N. J.,	[1129 Mt. Ephraim Av.]
Meyung, Leon Joseph,	Arch.,	Philadelphia,	1161 S. 19th St.
Miller, Albert C.,	Wh.,	Williamsport,	23 S. 34th St.
Miller, Frederick,	M. E.,	Witten-on-Ruhr,	116 S. 33d St.
Mitchell, Charles Edwin,	M. E.,	Germany,	
Mitchell, George Justice,	E. E.,	Baltimore, Md.,	Dorm. 30 Bodine.
Mockler, John Thomas,	C. E.,	Philadelphia,	3316 Race St.
Moore, James Arthur,	M. E.,	Buffalo, N. Y.,	Dorm. 394 N.Y. Alumni.
Morris, Mulford,	A.,	Panama, R. de P.,	104 S. 33d St.
Mosier, Raymond Barrett,	M. E.,	Wilkesbarre,	Dorm. 407 Leidy.
Mott, Merle E.,	Wh.,	Philadelphia,	6349 Drexel Road.
Mueller, Frieda,	B.,	do.	1329 N. Broad St.
Musselman, David Paul,	A.,	do.	4434 Lancaster Ave.
Nalle, Richard Tilghman,	E. E.,	Bryn Mawr.	5205 Archer St.
Nessenthaler, Frank Gaffney,	Ch.,	Chester,	3745 Spruce St.
Nevins, Duncan Campbell,	C. E.,	Philadelphia,	2012 Hart Lane.

\* Absent on leave, 1908-09.

Name.	Course.	Residence.	City Address.
Newberry, Edgar Andrew,	Arch.,	Wilkesbarre,	Dorm. 502 Baldwin.
Nofer, Harry Mathieu,	Wh.,	Philadelphia,	1716 Frankford Ave.
Noren, George Alexander,	C. E.,	New Britain, Conn.,	3704 Spruce St.
Nowlan, Philip Francis,	Wh.,	Philadelphia,	1831 N. 17th St.
Nusbaum, Jay Franklin,	A.,	Atlantic City, N. J.,	[112 Gowen Ave., Mt. Airy.]
*O'Neil, Sydney Daniel,	C. E.,	Chippewa Falls, Wis.	
Ottman, Robert Emery,	E. E.,	Central Bridge, N.Y.,	1333 N. 59th St.
Pape, William Sherwood,	A.,	Mobile, Ala.,	Dorm. 32 Bishop White.
Parker, Harry Ewing,	Arch.,	Southampton.	
Paul, John Dawson,	B.,	Philadelphia,	1007 Farragut Terrace.
Payrol, Silvio A.,	Arch.,	Rodas, Cuba,	3316 Woodland Ave.
Pendleton, Charles Rittenhouse, Jr.,	A.,	Macon, Ga.,	[Bryn Athyn.]
Perez, Ernesto Manera,	C. E.,	Tulancingo, Mexico,	3743 Spruce St.
Perkins, Joseph LeComte,	M. E.,	Philadelphia,	413 S. Broad St.
Peterman, Roy Lewis,	E. E.,	West Chester,	23 S. 34th St.
Peterson, Clarence Melvin	Wh.,	Buffalo, N. Y.,	Dorm. 206 Leidy.
Frederick,			
Philler, William Winsor,	A.,	Haverford,	3537 Locust St.
Phillips, George William Mac-	Ch. E.,	Roxborough,	329 Roxborough Ave.
pherson,			
Pitts, Robert Mackey,	E. E.,	Philadelphia,	1236 N. 41st St.
Platt, Frank Liming,	M. E.,	do.	1643 N. 55th St.
Pollock, Robert Wilson,	Arch.,	do.	1500 Tasker St.
Pomerantz, Harry Milton,	Ch.,	do.	5143 Haverford Ave.
Potter, Sheldon Frothingham,	A.,	do.	300 S. 36th St.
Pretsch, Raymond Nicholas,	C. E.,	do.	3311 N. Front St.
Price, Harrie Bertsch, Jr.,	M. E.,	do.	3937 Chestnut St.
Prickett, Irvin,	Wh.,	do.	2802 N. Broad St.
Purdy, Mabel Anna,	B.,	do.	2620 Germantown Av.
Ramsay, Robert Bruce,	C. E.,	York,	Dorm. 25 Coxe.
Ramsdell, Fred Lee,	C. E.,	Austin, Texas,	Univ. Training House.
Rhodes, Joseph Fosselman,	C. E.,	Wampum,	Dorm. 45 Bodine.
Rhodes, William Warren,	Ch.,	Chester,	[601 W. 7th St.]
Richers, George J.,	E. E.,	Altoona,	Dorm. 139 Provost Smith.
Rickersberg, Sidney,	M. E.,	Cleveland, Ohio,	3239 W. Norris St.
Riegel, Robert,	Wh.,	Philadelphia,	1020 Snyder Ave.
Rieser, Webster Luther,	M. E.,	do.	2317 N. 7th St.
Ritter, Samuel LeRoy,	C. E.,	Allentown,	Dorm. 30 Bishop White.
Ritter, Walter Lowrie,	A.,	Philadelphia,	2230 N. 20th St.
Robeson, George Chapin,	Arch.,	Farmville, Va.,	Dorm. 373 Hopkinson.
Rollinson, John Allen,	Arch.,	Elizabeth, N. J.,	3529 Locust St.
Romine, Edward Chapman, Jr.,	M. E.,	Philadelphia,	728 W. Huntingdon St.
Rosen, Alexis,	M. E.,	do.	1504 S. 6th St.
Rosenbaum, Samuel.	A.,	do.	605 S. 3d St.
Rothschild, LeRoy Berman,	Arch.,	do.	1832 N. 17th St.
Rummell, Richard William, Jr.,	Arch.,	Brooklyn, N. Y.,	Dorm. 22 Rodney.
Ryder, Fred Myers,	C. E.,	Norristown,	[922 N. Main St.]

\* Absent on leave, 1908-09.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Rynick, William Jay,	A.,	York,	3614 Walnut St.
Schmidt, Frank Alexander,	C. E.,	Chester,	[200 E. 8th St.]
Schmill, Carl G.,	Arch.,	Buffalo, N. Y.,	Dorm. 455 N.Y. Alumni.
Schmucker, Beale Melanchton,	C. E.,	West Chester,	3316 Walnut St.
Schoch, James Brown,	E. E.,	Philadelphia,	4201 Pine St.
Schantz, Robert Kline,	Wh.,	Allentown,	Dorm. 15 Morris.
Schauble, P. Lambert,	A.,	Erie,	338 N. 4th St.
Schermerhorn, Duane Thompson,	Wh.,	Bridgewater.	1236 N. 41st St.
Seagrave, Daniel Ralph,	E. E.,	Reno, Nevada,	Dorm. 147 Carruth.
Sedgwick, Westel Wiloughby,	Wh.,	Sandwich, Ill.,	5106 Larchwood Ave.
Shaffer, Thomas Carlyle,	A.,	Philadelphia.	[220 W. Horter St.]
Shallenberger, Charles Moore,	C. E.,	Germantown,	[Darlington Seminary.]
Sharpless, Anna E.,	B.,	West Chester,	Dorm. 23 Smth.
Shirk, A. Urban,	Wh.,	Lancaster,	3705 Walnut St.
Showalter, James Robinson,	A.,	Pittsburg,	2140 Master St.
Shryock, John Knight, Jr.,	C. E.,	Philadelphia,	Dorm. 385 Lippincott.
Simonson, Louis Waite,	Arch.,	Baltimore, Md.,	5009 Walton Ave.
Smiley, Andrew Robeno, Jr.,	C. E.,	Philadelphia,	3908 Chestnut St.
Smith, Allan Iungerich	Wh.,	do	1237 S. 46th St.
Smith, Charles Meldrum,	Ch.,	do	Dorm. 129 Craig.
Smith, Harold Parr,	Wh.,	Lockport, N. Y.,	[721 Boyer St.]
Smith, James Darrell,	M. E.,	Mt. Airy,	1241 S. 23d St.
Smith, Stanley,	C. E.,	Philadelphia,	2651 Germantown Av.
Smith, William Harold,	Ch.,	do	Dorm. 45 Bishop White.
Sowers, Claude Herr,	C. E.,	Lebanon,	Dorm. 11 Wilson.
Stafford, Irving Brentwood,	Wh.,	North Tonawanda, N. Y.,	
Stanley, Augustus Robbins,	A.,	Middletown, Conn.,	Dorm. 239 Hopkinson.
Stedman, George Orange,	Arch.,	Rome, N. Y.,	3735 Spruce St.
*Stites, William Brenizer,	C. E.,	Elkins Park	The Tracy, 36th and Chestnut Sts.
Stoever, Walter Augustus,	M. E.,	Philadelphia,	3604 Walnut St. [370 York St.]
Stuart, John Bruce,	E. E.,	Carlisle,	[71 Euclid Ave.]
Swallow, Harold Russell,	E. E.,	Camden, N. J.,	Dorm. 332 Franklin.
Taylor, Ellery Kirke,	Arch.,	Haddonfield, N. J.,	
Thomas, Frank Howard,	Wh.,	Brewer, Me.,	Dorm. 46 Bodine.
Thomas, Harry Hunt,	M. E.,	Haddonfield, N. J.,	
Thompson, George Jarvis,	Wh.,	Medford, N. J.,	
Torrey, Hamilton,	A.,	Melrose Park.	
Trainer, Maurice Newlin,	E. E.,	Trainer.	
Treat, Frederick Howard, Jr.,	Wh.,	Wayne,	3460 Walnut St.
Tuttle, Melsom Sabinas,	Wh.,	Germantown,	[30 E. Logan St.]
Van Osten, Willard Arrison,	M. E.,	Philadelphia,	938 S. 50th St.
Waite, Harris,	Wh.,	Lodi, Ohio,	3621 Locust St.
Walton, Jesse Pusey,	C. E.,	George School,	3212 Summer St.
Warner, William Richard, 3d,	A.,	Duffryn Mawr.	3529 Locust St.
Warner, William Deshler,	A.,	Columbus, Ohio,	3604 Walnut St.
Watson, Roy Cooper,	Wh.,	Germantown,	[5333 Wayne Ave.]
Weinstock, Sidney,	Ch.,	Philadelphia,	2224 N. Lambert St.

\* Absent on leave, first term.

## STUDENTS.

Name.	Course.	Residence.	City Address.
Weitzenfeld, Jacob Jean,	Arch.,	Philadelphia,	478 N. 4th St.
Wellbrock, Henry Aloysius,	Wh.,	Carbondale,	Dorm. 246 Lippincott.
Weller, Michael Angelo,	C. E.,	Washington, D. C.,	3312 Walnut St.
Weschler, Raymond Jacob,	Wh.,	Evanston, Ill.,	113 S. 37th St.,
Wesenberg, Thor Griffith,	A.,	Philadelphia,	1851 N. 19th St.
Wetherill, William Chattin,	M. E.,	do.	2014 Walnut St.
Wetzel, John Albert,	Arch.,	Loxly, Ala.,	Dorm. 21 Wilson.
Wiedersheim, William Augustus, ad,	A.,	St. Davids,	300 S. 36th St.
Wiest, Frederick Cleveland,	Arch.,	Ashland, Ohio,	Dorm. 36 Rodney.
Wiley, Carl Wonderly,	E. E.,	Philadelphia,	1951 N. 18th St.
Wilkinson, Fletcher Kauffman,	C. E.,	do.	2025 Mt. Vernon St.
Williams, John Francis,	C. E.,	do.	3516 K St.
Wilson, Edward Nicholas,	A.,	Ayer, Mass.,	3422 Sansom St.
Winterstein, Clarence,	M. E.,	Mt. Airy,	[22 E. Sedgwick St.]
Wilson, John Esler,	E. E.,	New Centreville.	
Wood, Emlen,	A.,	Philadelphia,	3537 Locust St.
Wood, Eugene Adrian,	Wh.,	Memphis, Tenn.,	3745 Locust St.
Wood, Nelson Howard,	Wh.,	Wayne.	
Wood, Percy Hollinshead,	Arch.,	Camden, N. J.,	3320 Walnut St.
Woodhouse, William Dudley,	C. E.,	Wethersfield, Conn.,	3704 Spruce St.
Worrell, Duncan Allen,	A.,	Pittsburg,	113 S. 37th St.
Young, Edgar Lloyd,	C. E.,	Philadelphia,	2550 N. 9th St.
Yang, Ngan-Chan,	Wh.,	Chang-chow, China,	3615 Locust St.
Yang, Ying Yueh,	Wh.,	Wusieh, China,	109 S. 34th St.
Yao, Chung Lin,	Wh.,	Tientsin, China,	3611 Locust St.

## SOPHOMORES.

Abbey, Edwin Austin, ad,	C. E.,	Mt. Holly, N. J.,	Dorm. 36 Bodine.
Abbott, William Lewis,	A.,	Philadelphia,	1533 N. 19th St.
Abrahamson, Frank August,	Arch.,	Motley, Minn.,	3332 Lancaster Ave.
Adams, James Livingstone,	Wh.,	Haddonfield, N. J.,	[106 Walnut St.]
Adams, Otto Eugene,	Arch.,	Baltimore, Md.,	Dorm. 21 Coxe.
Aldendifer, George Leroy,	Wh.,	Pittsburg,	3350 Walnut St.
Alexander, Julian,	Ch. E.,	Philadelphia,	306 N. 35th St.
Ambler, Chester William,	C. E.,	Jenkintown.	
Anderson, Harry Wallis,	C. E.,	Folcroft.	
Anderson, Robert Hall,	Arch.,	Lansdowne,	[35 W. La Crosse Ave.]
Armstrong, Harold Rodney	Ch. E.,	Milford,	Dorm. 32 E. F. Smith.
Baer, Ira Ben,	Wh.,	St. Paul, Minn.,	Dorm. 40 Rodney.
Baer, John Lawrence,	C. E.,	Philadelphia,	1605 N. Bouvier St.
Bailey, Forman Theophil,	Wh.,	Manasquan, N. J.,	3411 Walnut St.
Bain, Cowan,	Wh.,	Philadelphia,	2311 DeLancey St.
Baker, William Dartis,	C. E.,	Quebec, Canada,	1029 N. Front St.
Baldensperger, Howard Leroi,	Wh.,	Pittsburg,	Dorm. 45 Morgan.
Baldwin, John Stokes,	A.,	West Chester,	Dorm. 39 Morris.
Bamford, William Taylor,	E. E.,	Philadelphia,	1117 Shackamaxon St.
Barlow, Edwin Harold,	M. E.,	do.	1487 N. 52d St.
Barol, Alfred,	Ch.,	do.	532 S. 8th St.
Barrett, James Joseph,	Ch. E.,	do.	2530 Naudain St.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Barsky, Victor,	Wh.,	Wilmington, Del.,	[409 King St.]
Bassett, Fenwick Hazelton, Jr.,	C. E.,	Norwood,	[41 Ridley Ave.]
Bates, Richard Mortimer, Jr.,	Arch.,	Portland, Ore.,	Dorm. 426 Baldwin.
Benjamin, Claude Alexander,	M. E.,	Atlanta, Ga.,	3332 Lancaster Ave.
Baumhofer, Herbert Anthony,	Wh.,	Dubuque, Iowa,	Dorm. 410 Leidy.
Beatty, John Moffet,	Wh.,	Philadelphia,	2017 N. 7th St.
Bennitt, Allton,	E. E.,	Springfield, Mass.,	Dorm. 389 Lippincott
Benzing, Harry Jacob,	E. E.,	do.	716 W. Allegheny Ave.
Bischoff, Louis Goebel,	E. E.,	Audubon, N. J.	4901 Cedar Ave.
Black, Edgar Newbold, 3d,	M. E.,	Philadelphia,	3932 Pine St.
Black, Matthew B.,	C. E.,	Avon,	1633 N. 33d St.
Bloch, Lester Moses,	Wh.,	Philadelphia,	3344 Lancaster Ave.
Bonn, Arthur Emil,	E. E.,	Wilkesbarre,	[4622 Wayne Ave.]
Borden, John Morrow,	M. E.,	Germantown,	4134 Chester Ave.
Boyd, James Harold,	E. E.,	Philadelphia,	406 Ledger Building.
Boyle, Howard Peterson,	Wh.,	do.	1816 Cayuga St.
Brandt, Karl Raymond,	M. E.,	do.	
Bready, Caleb Valentine,	Wh.,	Willow Grove.	
Briggs, Edward Ashbrook	A.,	Newtown.	
Brock, Henry Gibson,	A.,	Philadelphia,	1612 Walnut St.
Brown, Creed Haymond,	Wh.,	San Mateo, Cal.,	3805 Locust St.
Brown, Clarence Walker,	Wh.,	Fox Chase,	[216 Borbeck St.]
Brown, Friedmann,	Wh.,	Germantown,	[116 W. Washington Lane.]
Brown, Paul,	M. E.,	Wayne.	
Browne, Byron T.,	C. E.,	Brooklyn, N. Y.,	3316 Walnut St.
Brown, George Marx,	Arch.,	Wilmington, Del.,	206 South 37th St.
Brubaker, Paul,	C. E.,	Mt. Joy,	3731 Locust St.
Bruder, Thomas Eugene,	C. E.,	Philadelphia,	140 N. 50th St.
Bryan, Allen Jacob,	C. E.,	Mechanicsville, N.Y.,	3350 Walnut St.
Burket, Carl William,	E. E.,	Altoona,	3425 Walnut St.
Buzby, Benjamin Franklin,	A.,	Swedesboro, N. J.,	Dorm. 11 Bodine.
Cadwallader, James Albert,	E. E.,	Philadelphia,	6012 Chestnut St.
Calkins, Hiram Burchard,	E. E.,	do.	1010 S. 49th St.
Cameron, Arthur Thomas,	Wh.,	do.	1211 Somerset St.
Campbell, Charles Cecil,	C. E.,	do.	870 N. Ringgold St.
Carmany, Charles Cyrus,	Wh.,	Atlantic City, N. J.,	124 S. 34th St.
Carpenter, Edmund Hawks,	A.,	Woodbury, N. J.	1228 S. 58th St.
Carpenter, William Seal,	A.,	Philadelphia,	[215 Ashmead St.]
Carr, Edwin Joseph,	Wh.,	Germantown,	40 N. 16th St.
Carrier, Carl Frederic Peale,	E. E.,	do.	3705 Walnut St.
Cassedby, Miller Aiken,	A.,	Forest Glen, Md.,	Dorm. 38 Bishop White.
Carvalho, Antonio Garcia de,	E. E.,	S. Paulo, Brazil,	Dorm. 242 Provost
Chapa, Pedro Acacio,	Arch.,	Monterey, Mexico,	Smith.
Chase, Harold Beverly,	A.,	Washington, D. C.,	Dorm. 101 Brooks.
Cheyney, Ernest Waldron,	A.,	Philadelphia,	259 S. 44th St.
Clement, Charles,	A.,	do.	2304 DeLancey St.
Coates, Edward Osborne,	M. E.,	do.	3328 Walnut St.
Coates, Sherman Gardner,	Arch.,	Berwyn.	
Cohen, Walter Solomon,	Arch.,	Pittsburg,	Dorm. 208 Leidy.

## STUDENTS.

Name.	Course.	Residence.	City Address.
Coleman, William Beecher,	Ch.,	Pottstown,	3316 Walnut St.
Colligan, Aloysius Francis,	C. E.,	Scranton,	Dorm. 40 Bishop White.
Collins, Joseph Harrison,	Wh.,	Philadelphia,	1604 N. 15th St.
Comer, Paul Finch,	M. E.,	do.	624 S. Washington Sq.
Corry, John,	E. E.,	do.	117 N. 19th St.
Cowen, George Lloyd,	Wh.,	Chesterfield, N. J.,	435 Napa St.
Cozens, Ernest Brazier,	A.,	Haddonfield, N. J.,	Dorm. 112 Franklin.
Creighton, Herbert,	C. E.,	Germantown,	[400 W. Chelten Ave.]
Crewitt, John Aubry, Jr.,	Wh.,	Newtown,	113 S. 37th St.
Cronin, William Joseph, Jr.,	C. E.,	Philadelphia,	1907 Vine St.
Crowell Walter Stillwell,	Ch. E.,	do.	Dorm. E. F. Smith.
Cruse, Henry Russell,	C. E.,	Germantown,	[5141 Pulaski Ave.]
Culin, Clarence Pennepacker,	Wh.,	Philadelphia,	4024 Parrish St.
Davidson, Louis Lawrence,	C. E.,	do.	878 N. 6th St.
Decker, Smith Irving,	Wh.,	Far Rockaway, N. Y.,	3614 Walnut St.
Decrow, Vere Royce,	M. E.,	Buffalo, N. Y.,	23 S. 34th St.
Devine, Robert Francis, Jr.,	Wh.,	Erie,	Dorm. 136 Fitler.
Devlin, Clarence Joseph,	M. E.,	Philadelphia,	1615 N. 10th St.
Dickerman, Charles, Jr.,	M. E.,	do.	51st and Wynfield Ave.
Dise, Alvin Percy,	C. E.,	Glen Rock,	Dorm. 419 McKean.
Diton, Carl Rossini,	A.,	Philadelphia,	1431 S. 20th St.
Dobbins, Royal Bolton,	Ch. E.,	Narberth,	[10] Elmwood Ave.]
Donnelly, Joseph Benedict,	E. E.,	Philadelphia,	667 N. 39th St.
Dooman, Eugene Hoffman,	C. E.,	New York, N. Y.,	264 S. 10th St.
Doub, Milton Berry,	C. E.,	Hagerstown, Md.,	Dorm. 39 Rodney.
Doxrud, George Hans,	C. E.,	Philadelphia,	3313 Ridge Ave.
Doyle, Hugh Patrick,	E. E.,	Baltinglass, Ireland,	2900 Richmond St.
Dunn, William Earle,	E. E.,	Philadelphia,	5045 Hazel Ave.
Eager, George Taylor,	C. E.,	Baltimore, Md.,	3529 Locust St.
Edmiston, Oliver Stogden,	E. E.,	Oak Lane.	
Elder, Bowman,	A.,	Indianapolis, Ind.,	3337 Walnut St.
Elder, George Taylor,	A.,	do.	3337 Walnut St.
Elmer, Jonathan, Jr.,	Wh.,	Bridgeton, N. J.,	Dorm. 40 Morris.
Elwell, Guy Randolph,	M. E.,	Philadelphia,	3904 Locust St.
Ely, Byron Fred,	Wh.,	Ridgway,	3400 Walnut St.
Emory, Benjamin Comegys,	A.,	Philadelphia,	4834 Hazel Ave.
Engel, Francis Joseph,	C. E.,	do.	4707 Chester Ave.
Erb, William, Jr.,	E. E.,	do.	268 S. 38th St.
Eynon, James Franklin,	M. E.,	do.	811 E. Thompson St.
Faber, Horace Brown,	Ch.,	York,	Dorm. 411 Leidy.
Faries, Randolph,	A.,	Chestnut Hill,	[7806 Cresheim Road.]
Feldman, Harry,	C. E.,	Philadelphia,	1601 S. 6th St.
Feustman, Bernard Herbert,	Wh.,	do.	Dorm. 10 E. F. Smith.
Finkensieper, Edwin Hugo,	Arch.,	Brooklyn, N. Y.,	Dorm. 102 Brooks.
Finn, Stephen Milsted,	Ch. E.,	Philadelphia,	115 N. Woodstock St.
Flagg, Paul Maxwell,	Wh.,	do.	2019 Spg. Garden St.
Flanigen, Donald,	E. E.,	Woodbury, N. J.,	3621 Locust St.
Flounders, Frank Ramsey,	Ch. E.,	Ashbourne.	
Flury, Henry,	C. E.,	Philadelphia,	650 N. 10th St.
Forchheimer, Marion Haber,	Wh.,	Mobile, Ala.,	Dorm. 10 Wilson.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Forney, John Wien,	A.,	Philadelphia,	2221 Spruce St.
Foster, Norman,	C. E.,	Darby,	268 S. 38th St.
Fox, Benjamin,	M. E.,	Philadelphia,	1725 S. 7th St.
Freas, Harold Leroy,	E. E.,	Trenton, N. J.,	[934 Lambert St.]
Fulton, David Irvin,	A.,	Philadelphia,	4531 Pine St.
Gail, Adelbert Dexter, Jr.,	M. E.,	Buffalo, N. Y.,	Dorm. 204 Brooks.
Galeano, Venancio Balbuena,	Wh.,	Asuncion, Paraguay,	3723 Spruce St.
		S. A.,	
Gallagher, Francis Evans, Jr.,	A.,	Wilmington, Del.,	[804 Broome St.]
Gallaher, Alvan Harlan,	M. E.,	Philadelphia,	2005 Betz Building.
*Galleher, Parke Ashby,	Arch.,	Washington, D. C.	
Galt, Alexander Bolling,	M. E.,	do.	Dorm. 101 Brooks.
Gefvert, Walter Stephen,	C. E.,	Philadelphia,	250 N. 15th St.
Gerber, Lipman S.,	E. E.,	Lakewood, N. J.,	Dorm. 126 Baldwin.
Gest, Alexander Purves, Jr.,	M. E.,	Trenton, N. J.,	Dorm. 38 Morgan.
Gettemy, William Russell,	Wh.,	Altoona,	Dorm. 23 Bishop White.
Gill, John David.	Ch. E.,	Philadelphia,	1312 S. 50th St.
Gilligan, Frank Patrick,	Wh.,	Wilkesbarre,	Dorm. 412 Leidy.
Gilpin, Leon Emory,	Ch.,	Laanna,	3705 Spruce St.
Goebert, Elmer Conrad,	E. E.,	Philadelphia,	1713 Erie Ave.
Gohl, Warren L.,	Wh.,	Williamsport,	Dorm. 393 N.Y. Alumni.
Goldberg, Herbert William,	Ch.,	Philadelphia,	3632 N. 17th St.
Goldenberg, Frank,	E. E.,	Baltimore, Md.,	600 Green St.
Golder, Samuel,	C. E.,	Philadelphia,	3223 Arlington St.
Graham, John, Jr.,	Arch.,	Chestnut Hill,	[32] Summit St.]
Grauer, Jacob Gottlieb,	E. E.,	Philadelphia,	3203 Turner St.
Green, Percy Warren,	Wh.,	Wilmington, Del.,	[912 Madison St.]
Grelis, John Joseph, Jr.,	C. E.,	Philadelphia,	2608 N. 29th St.
Guinzburg, Roland H.,	Ch.,	Du Bois,	Dorm. 337 Foerderer.
Hackett, Earle LeBré,	Wh.,	Philadelphia,	4009 Pine St.
Hagenlocher, Ernest,	E. E.,	Erie,	Dorm. 38 Morris.
Hanscom, Allan Thornton,	M. E.,	Philadelphia,	1714 Jefferson St.
Harrington, John Peter,	Arch.,	do.	8 N. 36th St.
Harris, Albert Edwin,	Arch.,	do.	1947 Christian St.
Harris, Kirk,	E. E.,	do.	1235 N. 53d St.
Hart, Albert Denison,	M. E.,	Meriden, Conn.,	219 S. 33d St.
Hart, John Robbins, Jr.,	A.,	Frankford,	[Castor Road].
Hartzell, William Franklin,	A.,	do.	3838 Germantown Ave.
Hastings, Frederick Watson,	Arch.,	Devon.	
Haupt, William Levengood,	A.,	Philadelphia,	169 W. Susquehanna Av.
Hauser, John William,	A.,	do.	462 Monastery Ave.
Havens, Coleman Riggs,	C. E.,	Norristown,	Dorm. 37 Bodine.
Haydock, Charles.	C. E.,	Philadelphia,	1928 Glenwood Ave.
Hennessey, Maurice John,	E. E.,	West Chester,	[19 Price St.]
Hennessey, Silas Wells,	Wh.,	Lee, Mass.,	117 S. 34th St.
Heyd, Luther Kelker,	E. E.,	Philadelphia,	5233 Chestnut St.
Hickman, Henry Hand,	C. E.,	West Chester,	816 N. 38th St.
Hill, William Ashby,	C. E.,	Orange, N. J.,	Dorm. 36 Bodine.
Hitchcock, Walter Andrew,	C. E.,	Philadelphia,	1934 Mt. Vernon St.
Hoagland, Horace Wilson,	A.,	Lambertville, N. J.,	3340 Chestnut St.
Hoagland, Lloyd Whitley,	M. E.,	Somerville, N. J.,	3312 Walnut St.

Name.	Course.	Residence.	City Address.
Hogan, William Francis, Jr.,	C. E.,	Brooklyn, N. Y.,	3924 Pine St.
Horner, Arthur Clinton,	C. E.,	Haddonfield, N. J.,	Dorm. 252 N.Y. Alumni.
Hough, William J. H.,	Arch.,	Ambler,	Dorm. 27 Rodney.
Hughes, Robert Driver, Jr.,	A.,	Woodbury, N. J.,	[165 Delaware Ave.]
Huhn, Charles Guenther,	E. E.,	Philadelphia,	1639 Girard Ave.
Hume, Errington Burnley, Jr.	A.,	Charleston, S. C.,	111 Rochelle Ave.
Humphrey, Pearcy Evans,	Wh.,	N. Tonawanda, N.Y.,	Dorm. 135 Fitler.
Humphreys, Thomas, Jr.,	A.,	Philadelphia,	1711 Spruce St.
Hunt, Clifford Rothwell,	C. E.,	do.	3745 Spruce St.
Hunter, Allan, Jr.,	Wh.,	do.	3337 Walnut St.
Hurd, Ralph,	Ch. E.,	do.	860 N. 41st St.
Hurwitz, William August,	A.,	do.	2614 N. 16th St.
Hutchinson, William Jones,	Arch.,	Germantown,	[6338 Burbridge St.]
Ingle, Charles Haskell,	C. E.,	Philadelphia,	2049 Wallace St.
Irish, Warren Lattimore,	A.,	Norristown,	307 S. 39th St.
Jackson, Henry Wallace,	M. E.,	Oaklane,	Dorm. 415 Franklin.
James, Reese Davis,	A.,	Reading,	3344 Walnut St.
Jimenez, Amador,	M. E.,	Vega Baja, Porto Rico,	3610 Locust St.
Jones, Arthur Scott,	M. E.,	Philadelphia,	1509 N. 20th St.
Kahanowitz, William Mordecai,	Wh.,	Greensburg,	3260 Sansom St.
Kane, Frank Chester,	C. E.,	Philadelphia,	2125 N. Natrona St.
Kaufmann, Karl Jacob,	Wh.,	Pittsburg,	Dorm. 10 Coxe.
Kauffman, Percival Barton,	Wh.,	Tacoma, Wash.,	Dorm. 241 Provost Smith.
Kent, Samuel Leonard, Jr.,	M. E.,	Lansdowne,	[43 Fairview Ave.]
Kern, Richard Arminius,	A.,	Taborton, N. Y.,	3346 Walnut St.
Kerr, Elwood Spence,	C. E.,	Philadelphia,	Wyoming Ave. and Mascher St.
Kiesewetter, Helmuth Moltke,	A.,	Germantown,	[48 W. Johnson St.]
King, Howard Vinton,	M. E.,	Philadelphia,	1830 N. 16th St.
Kinney, J. Stanley,	E. E.,	Meriden, Conn.,	219 S. 33d St.
Kirkpatrick, Alton,	M. E.,	Philadelphia,	1720 N. Park Ave.
Knapp, Kenneth Ralph,	Ch. E.,	Gwynedd.	
Kraus, Paul Tapper,	M. E.,	Abington.	419 S. 8th St.
Kun, Emanuel Washington,	C. E.,	Philadelphia,	Dorm. 134 Baird.
Kurtz, Harvey G.,	Wh.,	Reading,	3112 Montgomery Av.
Laib, Walter,	Ch. E.,	Philadelphia,	527 S. 41st St.
Lamb, Laura,	B.,	do.	1620 Green St.
Lane, Franklin Fayette,	A.,	do.	
Lane, Louis Valentine,	C. E.,	Beverly, N. J.	Dorm. 20 Morris.
Lauer, Stewart Elwood,	M. E.,	York,	
Lawton, Lewis Carr, 2d,	E. E.,	Wayne.	Dorm. 391 N.Y. Alumni.
Layton, Landreth Lee, Jr.,	C. E.,	Georgetown, Del.,	
*Lazoroff, Isaac Morris,	A.,	Tuckerton, N. J.	3332 Walnut St.
Lea, Edgar Paul,	C. E.,	Canton, China,	4012 Locust St.
Leahy, James William, Jr.,	C. E.,	Jersey City, N. J.,	1116 N. 40th St.
Leibkind, George Mayor,	M. E.,	Elisavetgrad,	
		Russia,	
Leichner, Charles William Henry.	Ch. E.,	Philadelphia,	1742 N. 10th St.
Leister, Maximilian Henry,	Wh.,	do.	1117 W. Lehigh Ave.

\*Deceased.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Lemmon, Brice Walter,	E. E.,	Pittsburg,	113 S. 37th St.
Levering, Walter,	A.,	Philadelphia,	2028 N. 15th St.
Leyboldt, Harry,	C. E.,	do.	1216 N. 28th St.
Liebsch, Joseph Peter,	C. E.,	do.	2831 N. Marshall St.
Linker, Henry,	E. E.,	do.	348 S. 4th St.
Lippman, Fred Daniel,	Wh.,	Corry,	Dorm. 319 Leidy.
Loveland, Clarence Clarke,	Wh.,	do.	Dorm. 214 Foerderer.
Lutz, Frank,	C. E.,	Norristown,	[127 Franklin Ave.]
MacAllister, Rae Barry,	B.,	Philadelphia,	2249 Fitzwater St.
MacBurney, J. Logan,	E. E.,	do.	2625 N. 33d St.
Macfarlane, George Elliott,	Wh.,	Methuen, Mass.,	268 S. 38th St.
McAllister, Paul James,	E. E.,	Millville, N. J.,	Dorm. 313 Leidy.
McCullough, Herbert Meredith,	Arch.,	Pittsburg,	3604 Walnut St.
McCurdy, Harold Rex,	C. E.,	Philadelphia,	5901 Overbrook Ave.
McEvory, Frank Edward,	A.,	Providence, R. I.,	Dorm. 360 Craig.
McGeorge, Royal,	Ch. E.,	Cynwyd.	428 N. Salford St.
McGleughlin, William,	C. E.,	Philadelphia,	Dorm. 378 Hopkinson.
McGrann, Richard Louis,	C. E.,	Lancaster,	3334 N. 16th St.
McKaig, Francis Paul	C. E.,	Philadelphia,	[5531 Pulaski Ave.]
McLaughlin, Mark,	M. E.,	Germantown,	1526 Spruce St.
Magill, Watson Harvey,	Wh.,	Oak Lane,	Dorm. 448 Lippincott
Mair, Walter Edmand,	Wh.,	Grinnell, Iowa,	[5145 Morris St.]
Mann, Garner Benson,	Ch.,	Germantown,	3610 Locust St.
Marcano, Octavio,	C. E.,	Rio-Pedras, Porto	
		Rico,	
Maris, Arthur McIlvain,	Wh.,	Philadelphia,	3802 Locust St.
Matheson, Donald Eric,	M. E.,	Reading,	Dorm. 134 Baird.
Matlack, David Johnson,	C. E.,	Philadelphia,	435 E. Girard Ave.
Matthews, Samuel Currie,	Wh.,	Clanton, Ala.,	3411 Walnut St.
Medwedeff, Marshall Herbert,	Ch.,	Chicago, Ill.,	3244 Sansom St.
Meixner, Howard Farragut,	C. E.,	Philadelphia,	3351 N. 19th St.
Mendenhall, Edward,	Ch. E.,	do.	3712 Baring St.
Miller, Joseph George,	Ch. E.,	do.	917 S. 3d St.
Miller, Warren Drake,	Arch.,	Terre Haute, Ind.,	Dorm. 55 Rodney.
Minds, George Washington,	Wh.,	Ramey,	300 S. 36th St.
Mirkil, Harold Hays,	M. E.,	Cynwyd,	3529 Locust St.
Moerk, Frank,	E. E.,	Oak Lane,	[13th and Chelten Av.]
Moore, Frank Kenneth,	A.,	Norristown.	
Morris, Benjamin Franklin,	Wh.,	Lewiston, Idaho,	23 S. 34th St.
Morrison, A. Louis,	Wh.,	Jersey Shore,	Dorm. 449 Lippincott
Moss, William Tiffany,	Wh.,	Des Moines, Iowa,	Dorm. 44 Bodine.
Mudehardt, George Grover,	C. E.,	Parker Ford,	Dorm. 37 Bishop White.
Muhlenberg, Frederick Augustus,	Arch.,	Reading,	Dorm. 207 Leidy.
Munroe, Russell Barker,	E. E.,	Washington, D. C.,	Dorm. 23 Rodney.
Murphy, Harold Purves,	Ch. E.,	Germantown,	[618 W. Rittenhouse.]
Musser, Henry Sellers,	Wh.,	Marietta,	631 Spruce St.
Nearing, Guy,	A.,	Philadelphia,	1427 N. 16th St.
Neilly, Andrew Hutchinson,	A.,	do.	1713 Wharton St.
Niblo, James Martin,	A.,	Norristown.	[1408 Powell St.]
Noble, John Franklin,	Ch.,	do.	3622 Chestnut St.
Norris, Edward Wentworth,	M. E.,	Philadelphia,	

## STUDENTS.

635

Name.	Course.	Residence.	City Address.
O'Connell, Armour,	Wh.,	Cincinnati, Ohio,	3604 Walnut St.
Ogden, Nelson Cooper,	C. E.,	Philadelphia,	Smith Bldg., E. Park.
O'Neill, William Charles, Jr.,	C. E.,	do.	3533 Locust St.
Parker, Alvin Mercer,	A.,	Strafford,	Dorm. 350 Baldwin.
Parker, Frank, Jr.,	Wh.,	Philadelphia,	21 N. 56th St.
Parker, Joseph Brooks Bloodgood,	M. E.,	Strafford,	Dorm. 350 Baldwin.
Parry, Harland Selser,	C. E.,	Philadelphia,	Torresdale.
Patterson, Carl Van Schaick,	Ch. E.,	Towanda,	3350 Walnut St.
Patterson, William,	C. E.,	Philadelphia,	4915 Walton Ave.
Payne, Olney Randall,	C. E.,	Bryn Mawr.	
Pearsall, Charles Henry Cummings,	Wh.,	Mauch Chunk,	Dorm. 203 Brooks.
Pearson, George Allen,	E. E.,	Philadelphia,	1937 N. Marvine St.
Pearson, Lawrence James,	Ch. E.,	do.	1532 N. Gratz St.
Pennepacker, Norman Woodward,	M. E.,	do.	867 Preston St.
Peoples, William Andrew,	C. E.,	do.	4046 Parkside Ave.
Perkins, Francis Everson,	M. E.,	do.	413 S. Broad St.
Perrott, Edwin William, Jr.,	A.,	do.	2027 Ontario St.
Phillips, William Malcolm, 2d,	Ch.,	Alexandria,	3743 Locust St.
Pierce, Arthur Warren;	E. E.,	West Chester,	[3 W. Gay St.]
Plummer, William, Jr.,	A.,	Quinton, N. J.,	Dorm. 43 Rodney.
Port, James Edgar,	C. E.,	Huntingdon,	3348 Walnut St.
Potter, Raymond F.,	Wh.,	Philadelphia,	300 S. 36th St.
Pugh, William Barrow, Jr.,	A.,	West Berlin, N. J.	
Pugliese, John,	C. E.,	Philadelphia,	1325 S. 15th St.
Pyle, Clyde Beethoven,	C. E.,	do.	827 N. 28th St.
Quinn, James M.,	Wh.,	Kewanee, Ill.,	3611 Locust St.
Rambo, Bertram Pierre,	A.,	Philadelphia,	2243 N. Broad St.
Rambo, Walter Sylvester,	M. E.,	do.	624 Erie Ave.
Rebmann, George Borrowes,	Wh.,	do.	759 Corinthian Ave.
Reeser, Otto Victor,	Arch.,	do.	5214 Reinhard St.
Reeves, Alfred Kennedy,	Wh.,	Bridgeton, N. J.,	Dorm. 40 Morris.
Register, Frank McGinnis,	C. E.,	Philadelphia,	628 N. 38th St.
Reid, Adam Irwin,	E. E.,	do.	1712 N. Gratz St.
Reitzel, Charles Erwin,	Wh.,	Steelton,	1319 S. 58th St.
Renner, Alan Diehl,	M. E.,	Buffalo, N. Y.,	Dorm. 25 Rodney.
Rennie, J. Homer,	A.,	Chester,	[214 Penn St.]
Reuter, Frederick William,	M. E.,	Philadelphia,	2910 N. 12th St.
Rhodes, Edward Frank,	M. E.,	Wampum.	
Rieger, Harry George,	Wh.,	Philadelphia,	819 N. 24th St.
Ritchie, William Davey,	C. E.,	do.	2809 Oxford St.
Riter, Michael Miller,	Wh.,	do.	4819 Trinity Place.
Roberts, Paul Greir,	E. E.,	Norristown,	[800 DeKalb St.]
Robeson, George Bush,	Wh.,	Bridgeton, N. J.,	Dorm. 34 Memorial.
Robinson, William Herbert,	Wh.,	Philadelphia,	4180 Germantown Ave.
Rohrer, Josiah Hershey,	M. E.,	Lancaster,	[3 Chester St.]
Rosengarten, Walter Edward,	C. E.,	Philadelphia,	3725 Fairmount Ave.
Ross, Elliott P.,	M. E.,	Freeport, N. Y.,	Dorm. 102 Brooks.
Ross, Willard Kerbaugh,	A.,	Philadelphia,	3718 N. 7th St.
Rue, John Reeves, Jr.,	E. E.,	Burlington, N. J.	
Ruff, Herbert,	M. E.,	Philadelphia,	1526 N. 5th St.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Russell, Gardner A.,	M. E.,	Philadelphia,	1906 Sansom St.
Saxman, P. Marseilles,	C. E.,	Haverford.	1540 N. 12th St.
Sawyer, Helen Katherine,	B.,	Philadelphia,	942 N. Bambrey St.
Schaefer, Clarence Christian,	E. E.,	do.	3136 N. Broad St.
Schaum, Fletcher,	M. E.,	do.	[130 Washington Ave.]
Scheidl, Charles, Jr.,	C. E.,	Phoenixville,	514 Race St.
Schell, August Henry,	Wh.,	Philadelphia,	1264 N. 23d St.
Schmidt, Alfred Joseph Brown,	M. E.,	do.	3604 Walnut St.
Schmidt, Harry William,	A.,	Shamokin,	3131 Cedar St.
Scholz, Karl William Henry,	C. E.,	Philadelphia,	3328 Walnut St.
Schroeder, Seaton, Jr.,	Arch.,	Washington, D. C.,	Dorm. 30 Morgan.
Schultz, Arthur H., Jr.,	M. E.,	Baltimore, Md.,	1922 N. Park Ave.
Schultz, William Wagner,	Arch.,	Philadelphia,	3604 Walnut St.
See, Willard,	Wh.,	Hamilton, Ohio,	1949 N. Judson St.
Seitz, Frank Irving,	Arch.,	Philadelphia,	3256 Chestnut St.
Semans, Harry Hustead,	C. E.,	Uniontown,	827 N. 41st St.
Sharp, George Thomas,	C. E.,	Philadelphia,	3117 N. Broad St.
Shedinger, William Frederick, Jr.,	do.	Buffalo, N. Y.,	Dorm. 23 Rodney.
Sibole, Barton Presley Leeds,	M. E.,	Philadelphia,	2034 E. Allegheny Av.
Simon, Fred Lester,	C. E.,	do.	3048 Frankford Ave.
Simon, Grant Miles,	Arch.,	Charleston, S. C.,	Dorm. 30 E. F. Smith
Simons, Albert,	Ch.,	Philadelphia,	909 N. Franklin St.
Simsohn, Julian Stern,	C. E.,	do.	3518 N. Broad St.
Skinner, James Mortimer,	Ch. E.,	Chester,	[309 Concord Ave.]
Slawter, Harry Richard,	Wh.,	Wallingford.	
Sloan, Elmer Thomas,	Wh.,	Pittsburg.	113 S. 37th St.
Smith, Darrell Hevenor,	A.,	Philadelphia,	3337 Walnut St.
Smith, George Allen,	A.,	York,	Dorm. 44 Morris.
Smyser, Jacob M., Jr.,	C. E.,	Philadelphia,	5428 Spruce St.
Sohn, Herman,	Arch.,	do.	4815 Springfield Ave.
Spangler, Henry Wilson, Jr.,	M. E.,	San José, Cal.,	3442 Chestnut St.
Spence, David Juan, Jr.,	Arch.,	Grand Rapids, Mich.,	Dorm. 41 Memorial.
Squier, Grover Cleveland,	Wh.,	Philadelphia,	4337 Pine St.
*Squier, Walter Armstrong,	M. E.,	do.	Dorm. 402 Brooks.
Stair, Hubert Luttmann,	C. E.,	York,	3932 Pine St.
Steckbeck, D. Walter,	B.,	Lebanon,	Dorm. 36 Morgan.
Stedman, Claude Wilmot,	Arch.,	Cleveland, Ohio,	4241 Regent Sq.
Steele, Marshall Kimble,	A.,	Philadelphia,	3533 Locust St.
Steele, William,	C. E.,	do.	656 N. 33d St.
Stellwagon, George Heist,	A.,	do.	1244 Lehigh Ave.
Steitz, Samuel Phares,	E. E.,	do.	1747 Gratz St.
Sternfield, Harry,	Arch.,	do.	723 N. 44th St.
Sterrett, Harold Reid,	M. E.,	do.	2529 N. 5th St.
Stewart, Andrew James, Jr.,	C. E.,	do.	3640 N. 18th St.
Stewart, James Raymond,	M. E.,	do.	601 N. 33d St.
Stiles, Morrison N.,	C. E.,	do.	Dorm. 225 Baldwin.
Stobert, Robert Clarence,	E. E.,	Birmingham, Ala.,	The Esmond, 12th
Strassburger, Perry Beaver,	M. E.,	Philadelphia,	and Spruce Sts.

\* Absent on leave for year.

Name.	Course.	Residence.	City Address.
Strong, James Fry,	A.,	Philadelphia,	4521 Spruce St.
Studdiford, James Ogilvie,	Wh.,	Lambertville, N. J.,	3745 Spruce St.
Sweet, Ralph Murray,	E. E.,	Saxton,	223 S. 33d St.
Taber, George Hathaway, Jr.,	M. E.,	Edgewood Park,	3614 Walnut St.
Tafel, Theodore, Jr.,	M. E.,	Louisville, Ky.,	Dorm. 44 Rodney.
Taylor, Vernon Frank,	Wh.,	Brockwayville,	3705 Walnut St.
Thomson, Cora Beggs,	B.,	Narberth.	
Thornhill, William Henry,	M. E.,	Atlantic City, N. J.,	3439 Chestnut St.
Throckmorton, John Ellis,	Wh.,	Freehold, N. J.,	Dorm. 46 Bodine.
Tiel, Howard Sheldon,	Wh.,	Philadelphia,	835 N. 21st St.
Tomlinson, Howard Earle,	M. E.,	St. Davids.	
Toner, Roland,	C. E.,	Baltimore, Md.,	Dorm. 395 N.Y. Alumni.
Tsang, Kwong Sheung,	Wh.,	Canton, China,	Dorm. 38 Rodney.
Tutelman, Carl,	C. E.,	Philadelphia,	2015 S. 8th St.
Twogood, Leon Scott,	C. E.,	do.	888 N. 23d St.
Valanti, Victor,	C. E.,	Buffalo, N. Y.,	3323 Walnut St.
Van Loon, Frank Russell	C. E.,	Philadelphia,	3505 Disston St.
Vauclain, Charles Parry,	M. E.,	Rosemont.	
Wade, Peter Ernest,	C. E.,	Fort Washington.	
Wagner, Frank,	C. E.,	Mt. Airy,	[7147 Sprague St.]
Wagner, Herbert Francis,	C. E.,	Philadelphia,	1826 S. 18th St.
Wahl, Charles Byron,	M. E.,	do.	2016 Tioga St.
Waltemath, William Frederick,	Wh.,	North Platte, Neb.,	3312 Walnut St.
Wambold, Edgar Mayback,	C. E.,	Philadelphia,	1909 N. 7th St.
Watkin, Frank McIlvain,	Wh.,	Wynnewood.	
Way, Henry Hartsough,	Wh.,	Minneapolis, Minn.,	Dorm. 108 Leidy.
Weimar, George John,	A.,	Philadelphia,	2237 N. 5th St.
Weiser, Franklin Sheaffer,	Ch. E.,	York,	3745 Spruce St.
Weitzenkorn, Joseph Weil,	Ch. E.,	Reading,	Dorm. 140 Provost Smith.
Weldin, Lewis Cass, Jr.,	Ch. E.,	Chester Heights.	
Wendel, Sanford Samuel,	Wh.,	Piqua, Ohio,	Dorm. 20 E. F. Smith.
Wessels, Walther John,	A.,	Brooklyn, N. Y.,	Dorm. 30 Memorial.
Wheeler, Frank Ralph,	Wh.,	Germantown,	[226 W. Johnson St.]
White, Arthur Jennings,	Ch. E.,	Philadelphia,	3417 Race St.
Wieder, Frank Felix,	Wh.,	do.	2029 N. 33d St.
Wiegmann, Jacob Edwin Rech,	M. E.,	do.	1221 N. 8th St.
Wilcox, Harold Mott,	A.,	do.	3453 Woodland Ave.
Williams, Calvin Corda,	M. E.,	do.	3113 N. 16th St.
Williams, David Evans, Jr.,	A.,	Bala,	3537 Locust St.
Wills, John Martyn,	Wh.,	Scranton,	119 N. 18th St.
Winter, Charles Henry,	Ch. E.,	Frankford,	[1110 Filmore St.]
Wolbert, George Smith,	Wh.,	Philadelphia,	422 S. 44th St.
Wolff, Robert Farber,	E. E.,	Sewickley,	223 S. 33d St.
Wolle, Francis,	A.,	Johnstown,	Dorm. 110 Franklin.
Wright, Edgar Fallows,	M. E.,	Philadelphia,	4130 Penngrove St.
Wunderle, Horace Godfrey,	Wh.,	Edge Hill,	3614 Walnut St.
Yerkes, Damon Greenleaf,	A.,	Jacksonville, Fla.,	Dorm. 113 Foerderer.
Young, Emanuel John,	M. E.,	Johnstown,	Dorm. 110 Franklin.
Ziegler, Morris,	C. E.,	Philadelphia,	1918 N. 11th St.

## THE COLLEGE.

## FRESHMEN.

Name.	Course.	Residence.	City Address.
Aberle, Gustave C.,	Wh.,	Philadelphia,	1437 Cayuga St.
Abraham, James Wallace,	C. E.,	do.	2040 Chestnut St.
Ackley, Charles William,	Wh.,	Vineland, N. J.,	3263 Locust St.
Adams, Albert Louis,	Wh.,	Bloomfield, N. J.,	3529 Locust St.
Adams, Henry Clay,	A.,	Philadelphia,	4226 Pine St.
Adler, Carrie,	B.,	do.	809 Columbia Ave.
Adolph, William Henry,	A.,	do.	3408 Wallace St.
Alexander, John,	A.,	Chestnut Hill,	[Highland Ave.]
Alleboch, Munysme K.,	Wh.,	Phoenixville.	
Allen, Chester Stranahan,	Ch.,	Warren,	910 Spruce St.
Allman, Lester,	Wh.,	Rochester, Ind.,	Dorm. 10 Morgan.
Allyn, Herman Webster,	A.,	Philadelphia,	501 S. 42d St.
Ambler, Frank Rhodes,	Wh.,	Abington.	
Anderson, Edward Lane,	Wh.,	Manoa.	
Anthony, Irvin Whittington,	A.,	Philadelphia,	5926 Master St.
Apfelbaum, Louis,	A.,	Coatesville,	610 Pine St.
Arkwright, George Alfred, Jr.,	A.,	Brooklyn, N. Y.,	255 S. 37th St.
Arnold, Anthony Lockwood,	A.,	Philadelphia,	202 S. 41st St.
Atlee, Edwin Ihrie, Jr.,	E. E.,	Germantown,	[3012 W. Coulter St.]
Bainbridge, Willoughby,	E. E.,	Pittsburg,	Dorm. 48 Rodney.
Ball, Herbert Keen,	M. E.,	Philadelphia,	4010 Pine St.
Bamberger, Justin Stein,	Wh.,	do.	1828 Girard Ave.
Barab, Max,	C. E.,	do.	315 Wharton St.
Bareuther, Charles Adam,	C. E.,	do.	1931 E. Albert St.
Barr, William,	Wh.,	Oak Lane,	3745 Spruce St.
Barrett, Russell Robinson,	C. E.,	Galway, N. Y.,	124 S. 34th St.
Barroll, John Leeds, Jr.,	A.,	Philadelphia,	3453 Woodland Ave.
Bates, William,	A.,	Camden, N. J.	268 S. 38th St.
Battin, Henry Weston,	M. E.,	Philadelphia,	4719 Leiper St.
Battles, Frank Farnham,	A.,	do.	218 S. 20th St.
Baugh, Albert C.,	A.,	do.	2238 N. Bancroft St.
Baughman, Walter Fee,	Ch.,	Du Bois,	Dorm. 337 Foerderer.
Bean, Clinton,	C. E.,	Trooper.	3341 Woodland Ave.
Beard, Ralph Herbert,	Wh.,	York,	Dorm. 22 Wilson.
Bechtel, Albert Reiff,	A.,	Royersford,	115 S. 34th St.
Becker, Leopold,	E. E.,	Philadelphia,	The Normandie, 36th and Chestnut Sts.
Bell, Edward Lewis,	Wh.,	Du Bois,	3708 Spruce St.
Bell, John Hamilton,	Wh.,	Dubuque, Ia.,	Dorm. 32 Memorial.
Berlin, Harold Ochs,	Wh.,	Knox,	Dorm. 359 Craig.
Benerman, Watkins,	Arch.,	Mt. Airy,	Dorm. 253 N. Y. Alumni.
Berger, Elsie Wilhelmina,	B.,	do.	2037 E. Madison St.
Beyer, Charles Herbert,	Wh.,	Ardmore.	Dorm. 104 Brooks.
Beyer, William Vinton,	Wh.,	Smoke Run,	3350 Walnut St.
Binder, Samuel Anton,	E. E.,	Pittsburg,	1619 N. 16th St.
Binswanger, Isidore,	Wh.,	Philadelphia,	1307 W. Lehigh Ave.
Blair, Albert,	M. E.,	do.	Dorm. 135 Fitler.
Blair, Kenneth E.,	Wh.,	Wayne,	3743 Locust St.
Black, Frank Harcourt,	Wh.,	Pawtucket, R. I.,	Dorm. 57 Coxe.
Bodley, James Wiley, Jr.,	A.,	New Orleans, La.,	

## STUDENTS.

639

Name.	Course.	Residence.	City Address.
Boehm, Walter,	C. E.,	Hutchinson, Kan.,	3342 Walnut St.
Bonet, Porfirio Augusto L.,	C. E.,	Bayamo, Cuba,	15 N. 34th St.
Bonstein, Robert John,	Ch.,	Shickshinny,	Dorm. 12 Wilson.
Boone, Harry Searles,	E. E.,	Pottstown,	3609 Sansom St.
Boston, Robert Benjamin,	Arch.,	Baltimore, Md.,	809 S. 19th St.
Bostwick, Harry Covey,	A.,	Pine Plains, N. Y.,	Dorm. 352 Baldwin.
Bostwick, William Walker,	A.,	do.	Dorm. 352 Baldwin.
Boyd, Charles Henry,	E. E.,	Philadelphia,	4607 Springfield Ave.
Bradford, William,	A.,	do.	125 S. 18th St.
Brandriff, Allen,	C. E.,	Millville, N. J.,	Dorm. 48 E. F. Smith.
Braun, Carl Ludwig, Jr.,	Wh.,	Lowell, Mass.,	3739 Spruce St.
Brinton, Caleb Jeffries, Jr.,	E. E.,	Philadelphia,	3319 Huntingdon St.
Brinton, James Clyde,	C. E.,	do.	5524 Hunter Ave.
Brooke, George, 3d,	Wh.,	Birdsboro,	924 Walnut St.
Brown, Linn Patton,	Wh.,	Philadelphia,	2026 N. 15th St.
Brown, William Philip,	Wh.,	Lancaster,	3400 Walnut St.
Budd, Thomas Allibone,	Wh.,	Wayne.	
Buermeyer, Lawrence Ladd,	A.,	Reading,	636 E. Chelten Ave., Germantown.
Bullitt, Logan McKnight, Jr.,	A.,	Torresdale,	2224 Pine St.
Burdick, Jervis Watson,	A.,	Philadelphia,	217 Buckingham Pl.
Burdick, Leroy H.,	Wh.,	Hornell, N. Y.,	Dorm. 23 Bishop White.
Bureau, Norman Vivian,	C. E.,	Philadelphia,	3226 N. 16th St.
Burgunder, B. Bernei,	Wh.,	Baltimore, Md.,	Dorm. 237 Fitler,
Burnett, Clarence Middleton,	C. E.,	Philadelphia,	[3808 Cambridge St.]
Bye, Arthur Edwin,	A.,	Germantown,	[210 High St.]
Cahall, William Cannon, Jr.,	A.,	do.	[154 W. Chelten Ave.]
Campillo, Ricardo del,	M. E.,	Cordoba, Argentine Republic,	3331 Walnut St.
Caro, Charles,	Wh.,	Philadelphia,	2006 St. James Place.
*Carman, Linford Adolph, Jr.,	Arch.,	do.	1206 W. Allegheny Av.
Carmoega, Enrique Rafael,	M. E.,	Rio Piedras, P. R.,	3610 Locust St.
Carter, William Raymond,	Wh.,	Philadelphia,	3151 Frankford Ave.
Cascaden, William Wilfred,	Wh.,	do.	928 S. 49th St.
Chandler, Luther,	A.,	Wilmington, Del.,	[1015 Market St.]
Charlton, William,	C. E.,	Philadelphia.	
Charlton, William Hart,	Arch.,	Washington, D. C.,	3222 Oxford St.
Chatfield, Raymond Rogers,	C. E.,	Toledo, Ohio,	Dorm. 229, Class of '87.
Chesebrough, Russell Clark,	Wh.,	Upland, Cal.,	[103 McKinley Ave., Lansdowne.]
Childs, George Josiah,	A.,	Philadelphia,	860 N. 41st St.
Church, Herbert,	C. E.,	do.	Dorm. 209 Franklin.
Clay, James Singleton,	Wh.,	Bryn Mawr,	5845 Magnolia Ave.
Clay, Robert Chesterfield,	C. E.,	Ogontz.	Dorm. 202 Brooks.
Clayton, Abraham Theophilus, Jr.,	C. E.,	Philadelphia,	3533 Locust St.
Cochran, Walter Ludlow,	Wh.,	Bayonne, N. J.,	Dorm. 42 E. F. Smith.
Cogan, Edward Thomas,	C. E.,	Moorestown, N. J.	
Coles, Levi Dudley,	A.,	Philadelphia,	5000 Woodland Ave.
Collins, James Monroe,			

\* Absent on leave for year.

## THE COLLEGE.

Name	Course.	Residence.	City Address.
Colom, José Enrique,	C. E.,	Ponce, Porto Rico,	3258 Chestnut St.
Conchar, Belden Lewis,	Wh.,	New York, N. Y.,	Dorm. 391 Lippincott.
Connell, Frederick Van Buren,	M. E.,	Philadelphia,	2036 Arch St.
Coons, Henry Robert,	A.,	do.	1510 Girard Ave.
Corson, Charles Russell,	Wh.,	Norristown.	
Costello, Albert Glenn,	Wh.,	Tacony,	3533 Locust St.
Costello, James William,	C. E.,	Newark Valley, N. Y.,	3717 Spruce St.
Cowan, Henry Benning,	E. E.,	Philadelphia,	502 N. 39th St.
Cranor, Donald Francis,	Ch.,	Conshohocken,	634 Market St.
Crawford, Charles McNeely,	Wh.,	Germantown,	[114 W. Phil-Ellena St.]
Cronin, William Joseph,	C. E.,	Philadelphia,	1907 Vine St.
Crow, Edward Benton,	A.,	Pittsburg,	Dorm. 244 Lippincott.
Crowe, William Mahoney,	E. E.,	Philadelphia,	1820 Gladstone St.
Cowell, Edwin Levi,	Wh.,	Hammonton, N. J.	
Crumbback, Frank Meade,	Ch.,	Philadelphia,	6731 Woodland Ave.
Culbertson, William Caiie,	A.,	Girard,	Dorm. 24 Memorial.
Culin, Curtis Grubb, Jr.,	Wh.,	Cranford, N. J.,	Dorm. 12 Bodine.
Cunningham, Orin Stewart,	Wh.,	Newcastle,	3309 Walnut St.
Cupitt, Irvin Monroe,	C. E.,	Germantown,	[600 High St.]
Curtis, Edward Allison,	Arch.,	Saratoga Springs,	Dorm. 44 Memorial.
		N. Y.,	
Curtis, James Washington,	Arch.,	El Paso, Texas,	3338 Walnut St.
Cutler, James Benjamin,	M. E.,	Germantown,	[320 W. School Lane.]
Daily, Francis Xavier,	C. E.,	Philadelphia,	1521 N. 17th St.
Dallett, Anthony Joseph,	M. E.,	Chestnut Hill,	[Main and Rex Sts.]
Dalsheimer, Hugo,	M. E.,	Baltimore, Md.,	Dorm. 10 Morris.
Dando, Joseph Clifford, 3d,	E. E.,	Wynnewood.	
Daniels, Frederick Knowlton,	E. E.,	Philadelphia,	3352 N. 22d St.
Dannenberg, Arthur,	Wh.,	do.	1747 N. 33d St.
Darby, Myron Guy,	Wh.,	Ridgway,	3721 Loeust St.
Davis, Charles Henderson,	Wh.,	Philadelphia,	316 S. 40th St.
Davis, Lambert Lisle,	E. E.,	Tacoma, Wash.,	Dorm. 13 Morris.
Davis, Rodney Newton,	C. E.,	Philadelphia,	3126 N. Camac St.
Dawson, Hugh Aloysius,	Wh.,	Scranton,	3803 Spruce St.
Deacon, Benjamin Harold	Wh.,	Mt. Holly, N. J.	
Decatur, Storer Goodwin,	E. E.,	Kittery Point, Me.,	Dorm. 436 Baird.
Deininger, Albert William,	Wh.,	Philadelphia,	2119 Master St.
DeLong, Edwin L.,	A.,	Bowers Station,	Dorm. 399 N. Y. Alumni.
Deming, George Edward,	E. E.,	Philadelphia,	624 N. 16th St.
Devine, Charles Paul,	M. E.,	Buffalo, N. Y.,	Dorm. 232 Craig.
Dick, Langhorne Bullitt,	A.,	Langhorne,	3453 Woodland Ave.
Dixon, Clark Kenyon,	Wh.,	Ridgway,	3400 Walnut St.
Dorn, Albert James,	A.,	Philadelphia,	3615 N. 6th St.
Dorr, Odin,	M. E.,	do.	1814 S. Rittenhouse Sq.
Dowling, North, Jr.,	Wh.,	do.	1928 Westmoreland St.
Downs, Charles Valentine,	M. E.,	do.	3709 Walnut St.
Doyle, Frederick,	Ch. E.,	do.	4513 Kingsessing Ave.
Drummond, Charles Hawkins,	E. E.,	do.	225 S. 44th St.
Drury, John Thomas,	Wh.,	Lynn, Mass.,	Dorm. 364 Baird.
Dudnick, Benjamin J.,	C. E.,	Philadelphia,	7134 Woodland Ave.
Dunn, Arthur Lesser,	Wh.,	Bala.	

## STUDENTS.

Name.	Course.	Residence.	City Address.
Dunn, John Struthers,	M. E.,	Germantown,	[46 E. Sedgwick St.]
Dunn, John Walter,	Arch.,	Pittsburg,	Dorm. 212 Franklin.
Edelman, J. Joseph,	C. E.,	Philadelphia,	1329 N. 7th St.
Edmiston, James Raymond,	M. E.,	Frankford,	[1637 Dyre St.]
Edmunds, Charles Stine,	Wh.,	Philadelphia,	4015 Baltimore Ave.
Edmunds, James R., Jr.,	Arch.,	Baltimore, Md.,	Dorm. 55 Coxe.
Eggleston, Raymond E.,	E. E.,	Waterbury, Conn.,	268 S. 38th St.
Eisenberg, Israel,	Arch.,	Woodbine, N. J.,	3350 Walnut St.
Eissler, Frederick,	A.,	Philadelphia,	2637 Amber St.
Elliott, Charles Amiel,	C. E.,	do.	6125 Woodland Ave.
Elliott, Charles Loring,	C. E.,	do.	4537 Spruce St.
Elliott, George Lewis,	Wh.,	Pittsburg,	3321 Walnut St.
Epping, Raymond Louis Edward,	M. E.,	do.	Dorm. 244 Lippincott.
Ertel, V. Albert L.,	Wh.,	Williamsport,	Dorm. 449 Lippincott.
Esheric, Joseph,	M. E.,	Philadelphia,	3926 Locust St.
Essick, Paul Jones, Jr.,	C. E.,	Oak Lane.	
Evans, Clinton I.,	Wh.,	Camden, N. J.,	[300 Carteret St.]
Evans, Morton Earle,	Wh.,	Philadelphia,	4616 Leiper St.
Ewing, Herbert Maxwell,	E. E.,	Frankford,	3529 Locust St.
Fanning, Milton Thomas,	E. E.,	Philadelphia,	2204 Hunting Park Av.
Faunce, Harold William,	A.,	Atlantic City, N. J.,	Dorm. 34 Coxe.
Fenton, Powel,	A.,	Philadelphia,	1319 Spruce St.
Ferris, Raymond Henry,	A.,	do.	511 S. 49th St.
Fetterolf, Morton Holdzkom,	Wh.,	Wyncote.	
Findersin, John Orson,	M. E.,	Frankford,	[5003 Penn St.]
Finnell, Jules Bertram,	Wh.,	Osborne, Ohio,	3643 Locust St.
Fisher, Clarence Wilson,	E. E.,	Philadelphia,	1502 Pine St.
Fisher, John Jacob,	A.,	Punxsutawney,	222 S. 15th St.
Flanagan, William Joseph,	M. E.,	Saratoga Springs,	Dorm. 44 Memorial.
		N. Y.,	
Flavell, George Kenneth,	Ch. E.,	Germantown,	[5438 Wayne Ave.]
Fleisher, Foreman,	A.,	do.	2045 Green St.
Foell, Sophie Elizabeth,	B.,	Philadelphia,	922 S. 24th St.
Forchheimer, Isaac Clarence,	Wh.,	Mobile, Ala.,	Dorm. 36 Coxe.
Fox, S. Crozer,	Wh.,	Philadelphia,	3337 Walnut St.
Frasier, Thomas Townsend, Jr.,	A.,	Bridgeport, Ohio,	Dorm. 119 McKean.
Freeman, William Goodell,	A.,	Philadelphia,	2034 Chestnut St.
Fretz, Joseph Lewis,	C. E.,	Jenkintown.	
Frick, George Peters,	M. E.,	Chester,	[14th and Potter St.]
Fromme, Walter,	E. E.,	New York, N. Y.,	Dorm. 10 Memorial.
Fuhrman, Jacob Marion,	C. E.,	Bloomfield, Ky.,	Dorm. 344 McKean.
Gandara, Leus A.,	C. E.,	Quito, Ecuador,	305 S. 38th St.
		S. A.,	
Geiger, Harvey,	A.,	Germantown,	[302 Pelham Road.]
*Gelb, Benjamin M.,	Arch.,	Philadelphia,	506 S. 4th St.
Gest, John Barnard, 2d,	A.,	Trenton, N. J.,	Dorm. 38 Morgan.
Gibson, William Stewart,	C. E.,	Philadelphia,	255 S. 45th St.
Gieske, Herman E.,	Arch.,	Ceredo, W. Va.,	3741 Spruce St.
Gilbert, Charles Hiram,	Wh.,	Montrose,	Dorm. 36 Bishop White.

\* Absent on leave for year.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Gillingham, Frank Kean,	A..	Germantown,	3621 Locust St.
Gilpin, Hood, Jr.,	A..	Philadelphia,	260 S. 15th St.
Girgrich, Jesse Clay,	Wh..	Manheim,	5209 Locust St.
Goldberg, Israel,	E. E..	Philadelphia,	310 Monroe St.
Goodwin, Harold Reese,	M. E..	Jenkintown.	
Gordon, Edward David, Jr.,	A..	Philadelphia,	407 Budd St.
Gordon, Francis Henry,	A..	South Amboy, N. J.	Dorm. 14 Morgan.
Goshorn, Harry Rook,	Ch. E..	Germantown,	[606 Wister St.]
Gottschall, Robert Jacob,	A..	Norristown,	[519 George St.]
Graham, Leslie Worthington,	A..	Philadelphia,	4828 Walton Ave.
Grant, William, Jr.,	Wh..	Merion.	
Grenewald, Melville Ellerman,	Wh..	Atlantic City, N. J.	Dorm. 22 Coxe.
Gross, Herbert Christian,	M. E..	Philadelphia,	879 N. 41st St.
Gunzenhauser, Charles Edward,	Wh..	Lancaster,	Dorm. 428 Baldwin.
Gunzenhauser, Frank Leonard,	Wh..	do.	Dorm. 203 Brooks.
Hagan, John Adam,	C. E..	Philadelphia,	1144 S. 23d St.
Hagar, Howard,	C. E..	do.	443 N. 52d St.
Hahn, Conrad Velder,	M. E..	do.	3526 Filbert St.
Hall, Frederick Thomas,	A..	Middleport, N. Y.,	5000 Woodland Ave.
Hall, Hannah,	B..	West Chester.	
Hall, William Torbert Ingram,	M. E..	do.	
Hammond, Earl Culin,	M. E..	Ogontz,	Room 570 Broad St. Station.
Hampton, William Clarence,	M. E..	Philadelphia,	3525 N. 18th St.
Hand, Joseph William,	M. E..	Frankford,	[8029 Frankford Ave.]
Hankele, Allen Joseph,	Ch..	Philadelphia,	464 Conarroe St.
Hansberger, Samuel Harold,	C. E..	Ashbourne.	
Harbison, Robert James, Jr.,	C. E..	Philadelphia,	2052 E. Susquehanna Ave.
Hardcastle, John McCall, Jr.,	E. E..	Media.	
Hardie, A. Brunner,	M. E..	Philadelphia,	52 N. 39th St.
Harlow, Robert Elsing.,	A..	Grafton, Mass.	Dorm. 224 McKean.
Harris, Siebel,	Wh..	Duluth, Minn.,	Dorm. 361 Baird.
Hartley, Thomas-Reuben Anthony A.,	A..	Philadelphia,	2803 Kensington Ave.
Michael,			
Hartman, Harrison Jay,	Arch..	Reading,	Dorm. 140 Provost Smith.
Hartman, Herbert Green,	Wh..	Danville, N. Y.,	Dorm. 141 Lippincott.
Hartranft, Chester,	Wh..	Jersey City, N. J.,	Dorm. 11 Wilson.
Harvey, Clarence Cochran,	A..	Kennett Square.	
Hassler, Eugene Beauharnais,	A..	Philadelphia,	2261 N. 21st St.
Hawthorne, Raymond Lee,	Wh..	do.	839 S. 55th St.
Hayday, Horace Russell,	A..	do.	1620 N. 15th St.
Haydock, Horace W.,	Wh..	Ridley Park,	2123 Locust St.
Hazlehurst, Samuel,	C. E..	Philadelphia,	3453 Woodland Ave.
Heap, George Roscoe,	C. E..	do.	24 N. Paxon St.
Hemphill, John Mickle,	A..	West Chester.	
Hess, Walter Williams,	A..	Philadelphia,	4914 Cedar Ave.
Heyburn, Henry Barret,	A..	Louisville, Ky.,	Dorm. 24 Bishop White.
Hickey, Charles H.,	C. E..	Passaic, N. J.,	3347 Woodland Ave.
Hill, Russell Benjamin,	C. E..	Philadelphia,	4413 Chestnut St.

Name.	Course.	Residence.	City Address.
Hillman, Carl Richard,	Wh.,	Pelham, N. H.,	Dorm. 21 Memorial.
Hippie, Herndon Page,	Wh.,	Des Moines, Ia.,	3621 Locust St.
Hitschler, Charles William,	Wh.,	Philadelphia,	1423 Christian St.
Hoeflich, Llewellyn A.,	Wh.,	do.	132 N. 50th St.
Hogan, Daniel Augustine,	Arch.,	Brooklyn, N. Y.,	3924 Pine St.
Holmes, Lennox,	Wh.,	Seattle, Washington,	Dorm. 40 Coxe.
Homer, Henry Lippincott,	A.,	Lansdowne	
Horigan, Walter Lee,	Wh.,	Pittsburg,	Dorm. 212 Franklin.
How, Dana Greenleaf,	Wh.,	Derry Village, N. H.	Dorm. 21 Memorial.
Hoyt, William Henry,	A.,	Camden, N. J.,	[415 Chambers Ave.]
Hubbell, Richard Law,	M. E.,	Bridgewater.	
Hubinger, John Carl,	Wh.,	Keokuk, Ia.,	3422 Sansom St.
Hughes, Gilbert Robert,	A.,	Rome, N. Y.,	212 S. 37th St.
Hughes, Leon Dickinson,	E. E.,	Scranton,	3709 Woodland Ave.
Hughes, Richard Kenneth,	C. E.,	Philadelphia,	4006 Pine St.
Hurff, Wallace J.,	Wh.,	Blackwood, N. J.,	2614 N. 16th St.
Hurwitz, Felix Darwin,	C. E.,	Philadelphia,	3258 Chestnut St.
Husted, Edward John,	A.,	London, England,	255 W. Horter St.
Huston, Aubrey,	Arch.,	Germantown,	1837 Spruce St.
Hutchinson, Daniel Lovell, 3d,	Wh.,	Philadelphia,	3705 Walnut St.
Innes, Daniel Tracy,	A.,	Canton,	3705 Walnut St.
Ingessoll, William Roberts,	A.,	South Orange, N. J.,	3604 Walnut St.
Irwin, Pierson Clement,	Wh.,	Lansdowne,	Dorm. 38 Bodine.
Jennings, Arthur B.,	Arch.,	New York, N. Y.,	Dorm. 217 Foerderer.
Jameson, Roy Harold,	Wh.,	Clearfield,	5213 GermantownAv.
Johnson, Claude Raymond,	A.,	Philadelphia,	3705 Walnut St.
Jones, Breck, Jr.,	Wh.,	St. Louis, Mo.,	255 S. 15th St.
Jones, Guy Maclean,	A.,	St. Martins.	[1010 Delaware Ave.]
Jones, James Alvin,	E. E.,	Baltimore, Md.,	115 S. 34th St.
Jones, Lawrence Jesse,	A.,	Wilmington, Del.,	1829 Christian St.
Jones, Louis Raymond,	C. E.,	Royersford,	5416 Haverford Ave.
Jones, Philip James,	Wh.,	Harrisburg,	2223 Reed St.
Jones, Walter,	E. E.,	Delanco, N. J.,	Dorm. 20 E. F. Smith
Jones, William Colton Lyster,	C. E.,	Philadelphia,	508 Spruce St.
Joyce, Robert Halliday,	Wh.,	do.	3347 Woodland Ave.
Kahn, Forrest Emanuel,	E. E.,	Piqua, Ohio,	748 N. 43d St.
Kaplaer, John Mandelstam,	C. E.,	Phoenixville,	1803 N. 17th St.
Karr, Douglas,	Wh.,	Passaic, N. J.,	1437 S. 13th St.
Kauffman, Herbert Pancoast,	E. E.,	Philadelphia,	[122 E. Sharpnack St.]
Kaufmann, Gustav,	Ch.,	do.	[427 Walnut St.]
Kaufman, Jacob,	Arch.,	Buffalo, N. Y.,	3322 Woodland Ave.
Keast, Schuyler, Sheldon Albert	C. E.,	Germantown,	418 S. 18th St.
Keck, Charles Winfield,	Wh.,	Allentown,	529 S. Broad St.
Keefe, William Budd,	C. E.,	Buffalo, N. Y.,	2233 N. Broad St.
Keenan, John Berchmans, Jr.,	B.,	Philadelphia,	[1100 Bergen Ave.]
Kelsh, Harry Thomas, Jr.,	C. E.,	do.	3641 Locust St.
Kennedy, Amos Day,	Wh.,	do.	3529 Locust St.
Kent, Frank,	M. E.,	Camden, N. J.,	1907 Spruce St.
Kent, George Ruddle,	M. E.,	Wyncote,	
Keplinger, Lewis Wolfkill,	Wh.,	Kansas City, Kan.,	
Kerr, Alexander, Jr.,	Wh.,	Philadelphia,	

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Kerr, William Barclay,	Ch.,	East Orange, N. J.,	301 S. 40th St.
Ketterer, John Walter,	Arch.,	Butler,	3312 Walnut St.
Kiehl, Eugene Phillips,	E. E.,	Philadelphia,	Chelten Ave. and 13th St.
King, Austin William,	Arch.,	Danville, Ill.,	3725 Spruce St.
King, Charles Fisher, Jr.,	E. E.,	Wilmington, Del.,	[906 W. 11th St.]
Kingsbacher, Alvin,	Wh.,	Pittsburg,	Dorm. 208 Leidy.
Kirkpatrick, Donald Morris,	Arch.,	Easton,	3916 Locust St.
Klein, William Jones,	Ch.,	East Orange, N. J.,	[82 S. Grove St.]
Kline, Charles Henry, Jr.,	C. E.,	Philadelphia,	653 N. 11th St.
Knebelman, Morris S.,	M. E.,	Odessa, Russia,	1116 N. 40th St.
Knowles, Edwin Albert, Jr.,	E. E.,	Philadelphia,	1508 French St.
Koehler, William Frederick,	E. E.,	do.	4911 Florence Ave.
Koronski, George William,	C. E.,	do.	3265 Woodland Ave.
Koschwitz, Frederick Henry,	Wh.,	Washington, D. C.,	Dorm. 37 Rodney.
Kratz, Gordon Wilson,	E. E.,	Philadelphia,	1232 Butler St.
Krauss, Robert Berthold,	Ch. E.,	do.	1937 N. Napa St.
Kuen, William B.,	E. E.,	Cynwyd.	
Kuhn, George John,	E. E.,	Philadelphia,	1021 N. Randolph St.
Kunzig, Robert Weiss,	Ch. E.,	do.	1218 W. Girard Ave.
Kushbaum, Bertram,	Wh.,	do.	1820 Spg. Garden St.
Kynett, Harold Havelock, Jr.,	Wh.,	do.	614 S. 48th St.
Lafean, Earle Bernard,	Wh.,	York,	Dorm. 398 N.Y. Alumni.
Laird, Harold William,	Wh.,	Germantown,	229 E. Logan St.
Lamb, Roswell Gallup,	C. E.,	Philadelphia,	527 S. 41st St.
Landes, Frank Raymond,	Wh.,	Twin Falls, Idaho,	3350 Walnut St.
Landow, Philip,	C. E.,	Philadelphia,	304 S. 2d St.
Lansburgh, Mark William,	Arch.,	Washington, D. C.,	Dorm. 229 Class of '87.
Lavery, Paul Edward,	A.,	Lavery,	Dorm. 230 Craig.
Learned, Henry Dexter,	A.,	Swarthmore.	
Lee, Russell Morris,	A.,	Chestnut Hill,	[308 Rex Ave.]
Lehman, David Emanuel,	Arch.,	Newark, N. J.,	Dorm. 25 Morgan.
Lehman, Walter Joseph,	Ch. E.,	Philadelphia,	2419 N. 30th St.
Lehman, James Edward,	A.,	Whitford.	
Leighton, Leroy,	Wh.,	Worcester, Mass.,	3210 Race St.
Lenhardt, Elgin Harleman,	A.,	Norristown,	[21 Jacoby St.]
Lenhart, John Harold,	Wh.,	Uniontown,	3417 Walnut St.
Leven, Albert,	C. E.,	Philadelphia,	435 South St.
Levene, Benjamin,	C. E.,	do.	7212 Saybrook Ave.
Levi, Edgar Albert,	Ch. E.,	do.	1821 N. 17th St.
Lewis, Silas Weir,	Wh.,	Germantown,	[51 Cliveden Ave.]
Lewis, Walter Hallowell, Jr.,	C. E.,	West Chester.	
Lion, Albert Romandus,	Wh.,	St. Marys,	Dorm. 14 Bodine.
Loughran, Edward Paul,	A.,	Philadelphia,	2238 N. Broad St.
Louis, Isadore,	Arch.,	Appleton, Wis.,	1921 N. 23d St.
Logan, William Stevenson, Jr.,	M. E.,	Chester,	[622 Concord Ave.]
Lohman, Maurice Rosenthal,	A.,	Ft. Wayne, Ind.,	Dorm. 26 Morgan.
Love, S. Arthur, Jr.,	Arch.,	Philadelphia,	3608 Chestnut St.
Lucas, John Spencer,	Ch.,	Philadelphia,	2018 Wallace St.
Ludwick, Frederick Joseph,	Arch.,	Shippensburg,	3344 Walnut St.
Lynd, James Alfred,	Wh.,	Philadelphia,	6362 Overbrook Ave.

## STUDENTS.

645

Name.	Course.	Residence.	City Address.
Lyons, Frank Duffield,	A.,	Philadelphia,	6769 Ridge Ave.
MacDonnell, Charles,	C. E.,	do.	110 N. 63d St.
MacFarland, William Thomas, Jr.,	B.,	Burlington, N. J.,	Dorm. 366 Baird.
McClellan, Earl Allen,	E. E.,	Erie,	Dorm. 136 Fitler.
McClure, H. Russell,	Arch.,	Danville,	Dorm. 322 Leidy.
McConnell, Franklin Perkins,	M. E.,	Darby,	[100 S. 4th St.]
McCool, Benedict Bryson,	M. E.,	Marcus Hook.	
McCutcheon, James Johnson,	C. E.,	Philadelphia,	2219 Tioga St.
McDermott, James Ignatius,	E. E.,	do.	237 N. 22d St.
McGrath, Thomas Walter,	E. E.,	do.	1009 Oxford St.
McIntire, George Walter,	C. E.,	Pittsburg,	3716 Locust St.
McKee, John Brown,	M. E.,	Germantown,	[549 Pelham Road.]
McMichael, Henry Morton,	A.,	Philadelphia,	2126 Walnut St.
MacMillan, Olds,	Wh.,	West Pittston,	Dorm. 128 Class of '87.
McNierney, Cornelius Raymond,	Wh.,	Titusville,	Dorm. 127 Class of '87.
Mahuken, Louis,	Wh.,	Brooklyn, N. Y.,	3529 Locust St.
Maloney, Bartholomew Thomas,	Arch.,	Pittston,	Dorm. 40 E. F. Smith.
Mann, Carl Philip,	E. E.,	Beverly, N. J.	
Marcano, Luis J.,	E. E.,	Rio Piedras, Porto Rico,	3323 Walnut St.
March, William Hallman,	Wh.,	Philadelphia,	704 N. 16th St.
Marcus, Marvin Melvin, Jr.,	Wh.,	Buffalo, N. Y.,	Dorm. 130 Craig.
Markey, John B., Jr.,	Wh.,	Kansas City, Mo.,	3400 Walnut St.
Markland, Albert Romaine,	E. E.,	Altoona,	5132 Arch St.
Marley, Francis Joseph,	E. E.,	Philadelphia,	1934 Bainbridge St.
Marshall, Edward Wayne,	A.,	Haddonfield, N. J.	
Martin, Clark Daniel,	Arch.,	Pine Grove,	3911 Pine St.
Mathews, Raymond,	Arch.,	Philadelphia,	3410 Race St.
Maxwell, Robert Philipp Frank,	A.,	do.	2433 N. College Ave.
Mayl, Joseph Edward,	Wh.,	Dayton, O.,	Dorm. 445 Lippincott.
Meacham, Edward Evans,	C. E.,	Philadelphia,	5034 Franklin St.
Mears, John William,	A.,	Germantown,	[114 E. Upsilon St.]
Mehling, Jacob,	Wh.,	Brooklyn, N. Y.,	Dorm. 48 Morris.
Merritt, Morris Hill,	A.,	Philadelphia,	1917 Spruce St.
Meyers, Herbert Henry,	Ch. E.,	do.	2134 N. 18th St.
Miller, Daniel Milton,	A.,	do.	Dorm. 149 N.Y. Alumni.
Miller, Daniel Yeakel,	E. E.,	Chestnut Hill.	
Miller, Edwin Frank,	E. E.,	Erie,	Dorm. 21 Morgan.
Miller, Ewing Harry,	Arch.,	Terre Haute, Ind.,	Dorm. 55 Rodney.
Miller, Harold Brown,	C. E.,	Philadelphia,	7109 N. Broad St.
Miller, Henry Fred,	Wh.,	Michigan City, Ind.	
Miller, Joseph Hilton,	M. E.,	Philadelphia,	3630 N. 16th St.
Miner, Kenneth Lossing,	C. E.,	Slingerlands, N. Y.,	3720 Locust St.
Mirkil, Lyle Hazleton.,	Wh.,	Wyncote.	
Mitchell, John Allen,	C. E.,	Clearfield,	Dorm. 15 Bodine.
Moessinger, William Edward,	Wh.,	Buffalo, N. Y.,	3718 Locust St.
Moffitt, Francis Ackley,	Ch. E.,	Binghamton, N. Y.,	Dorm. 450 Lippincott.
Moody, William Montague,	E. E.,	Philadelphia,	Hamilton Court 39th and Chestnut Sts.
Moon, J. Gordon,	A.,	do.	1927 S. 17th St.
Moon, James Norman,	C. E.,	do.	1234 Reed St.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Moore, Charles Deal,	Wh.,	Bellwood,	3614 Walnut St.
Moore, Clarence Woolston,	E. E.,	Frankford,	[Cor. Penn and Foust Sts.]
Moore, Clayton Fife,	Wh.,	Philadelphia,	271 S. 4th St.
Morris, Horatio Howard,	M. E.,	St. Martins,	3453 Woodland Ave.
Morton, DeForest Willard,	Wh.,	Philadelphia,	1933 Chestnut St.
Morton, Kenneth Hildeburn,	B.,	do.	1933 Chestnut St.
Moy, Frank,	E. E.,	do.	910 Spring St.
Mulford, Frank Bowen,	Wh.,	Cedarville, N. J.,	Dorm. 359 Craig.
Mulford, John Brantley, 3d,	A.,	Wyncote,	3641 Locust St.
Müller, Joseph Henry,	Ch. E.,	Swarthmore.	
Murphy, Samuel Edward,	A.,	Pittsburg,	113 S. 37th St.
Meyers, Jacob,	Wh.,	Philadelphia,	4206 Parkside Ave.
Myers, Earl Pierce,	Arch.,	do.	3533 Locust St.
Myer, Jerrold H.,	Wh.,	New York City, N. Y.,	Dorm 26 Morris..
Nagle, Harry Clay, Jr.,	Ch.,	Philadelphia,	3018 N. Broad St.
Nalle, Albert,	C. E.,	Bryn Mawr.	
Narrigan, Clifford Young,	B.,	Narberth,	118 N. 6th St.
Nelch, George Henry,	A.,	Springfield, Ill.,	3712 Spruce St.
Nevin, Ogden,	A.,	Riverton, N. J.	
Newborn, G. Carl,	A.,	Royersford.	
Newcomb, Frank Arick,	M. E.,	Philadelphia,	5512 Hunter Ave.
Nuttinger, Louis William,	Wh.,	do.	2115 N. Camac St.
Norris, Joseph Judson,	Wh.,	New Castle,	5244 Locust St.
O'Connor, James Haughney,	A.,	Mahanoy City,	Bingham Hotel.
Oreamuurr, Juan Ma Lolera,	Wh.,	Heredia, Costa Rica,	3301 Walnut St.
Orth, Andrew Parke,	A.,	Philadelphia,	1247 S. 46th St.
Oseroff, Abraham,	A.,	Pittsburg,	3962 Pennsgrove St.
Osterlund, John Louis,	E. E.,	Philadelphia,	5008 Beaumont Ave.
O'Sullivan, Walter Ridgely,	C. E.,	do.	4230 Otter St.
Otis, James Clifford,	B.,	Poplar Ridge, N. Y.,	1804 Green St.
Owens, Harry Spearing,	M. E.,	Philadelphia,	2046 N. 7th St.
Packer, Herbert Millette,	C. E.,	do.	4020 Parrish St.
Packer, Margaretta,	B.,	George School.	
Pancoast, Richard Montgomery,	Wh.,	Camden, N. J.,	[205 Cooper St.]
Jr.,			
Patterson, Francis Lytton,	A.,	Mt. Airy,	[7107 Chew St.]
Patterson, Mary Clagett,	B.,	Philadelphia,	2239 N. 16th St.
Patterson, Vernon T.,	Wh.,	Germantown,	[117 W. Rittenhouse St.]
Patton, Harold C.,	Ch. E.,	Media.	
Peck, Luther Longstreet,	Wh.,	Scranton,	3721 Spruce St.
Pelaez, Manuel Antonia,	C. E.,	Pinar del Rio, Cuba,	3268 Sansom St.
Petchin, Charles,	Wh.,	Philadelphia,	1541 N. 20th St.
Peterman, Jack Maurice,	C. E.,	do.	3659 Old York Road.
Pettit, Nathaniel Allan,	Wh.,	do.	St. James, 13th and Walnut Sts.
Pfeil, Herbert Maxwell,	Wh.,	do.	The Tracy, 36th and Chestnut Sts
Pierce, Leslie Merton,	E. E.,	Clayton, N. J.,	Dorm. 49 Morgan.
Pilling, George Platt,	E. E.,	Philadelphia,	300 S. 36th St.

Name.	Course.	Residence.	City Address.
Pina, Florentino S.,	C. E.	Matanzas, Cuba,	3323 Walnut St.
Pina, Raul E.,	C. E.	do.	3323 Walnut St.
Pinder, Norwood Lowell,	A.,	Key West, Florida,	3269 Woodland Ave.
Platnick, Mark Louis,	Ch.,	Amur, Russia,	
Platt, Philip Galpin,	Arch.,	Wallingford.	511 S. 4th St.
Plummer, J. Lee, Jr.,	C. E.,	Hollidaysburg,	Dorm. 21 Bodine.
Pomeroy, William Henry,	E. E.,	Flint, Mich.,	38 N. 36th St.
Pooley, Frank Davenport,	M. E.,	Philadelphia,	2318 N. Park Ave.
Porter, Harry Tindale, 2d,	Wh.,	do.	3068 Frankford Ave.
Powell, William Weaver,	Wh.,	Clearfield,	3328 Walnut St.
Pownall, Samuel Leigh,	A.,	Richboro,	Dorm. 23 Morgan
Pringle, Ernest Edward,	Arch.,	New York, N. Y.,	Dorm. 35 Morris.
Pryor, Hoffman Allan,	A.,	do.	3400 Walnut St.
Purviance, Donald A.,	Wh.,	Huntington, Ind.,	3621 Locust St.
Quigley, Stephen Boyer,	A.,	Mobile, Ala.,	4040 Walnut St.
Quo, Tai-Chi,	A.,	Wusueh, China,	3615 Locust St.
Ramer, Theodosia Maude,	B.,	Philadelphia,	1325 N. Frazier St.
Raser, John Vincent,	B.,	Reading,	Dorm. 434 Class of '87
Raub, Joseph A.,	Wh.,	New Rochelle, N. Y.,	Dorm. 334 Franklin.
Rea, William Freeland,	M. E.,	Philadelphia,	802 N. 16th St.
Read, Miles Heckendorn,	M. E.,	Wrightstown.	
Read, Thomas Preston,	A.,	Huntingdon,	3943 Locust St.
Reath, Thomas, Jr.,	A.,	Philadelphia,	Dorm. 209 Franklin.
Recordon, Charles Earle,	E. E.,	Newark Valley, N. Y.,	3717 Spruce St.
Reed, Raymond Sydney,	E. E.,	Chestnut Hill,	[7 E. Chestnut Ave.]
Reeder, David Kitchen,	Arch.,	Philadelphia,	3533 Locust St.
Rees, Isadore,	C. E.,	do.	342 S. 4th St.
Regan, Albert Hart,	C. E.,	Lambertville, N. J.,	3340 Chestnut St.
Rehfuss, George M.,	C. E.,	Philadelphia,	1327 S. Broad St.
Reichert, Henry D. Welsh	M. E.,	do.	Dorm. 404 Brooks.
Reilly, James Augustus,	Wh.,	Bangor, Me.,	3627 Locust St.
Reinhardt, Charles Gilbert,	C. E.,	Philadelphia,	1025 Brown St.
Renninger, Harry,	Wh.,	Glenside.	
Rhoads, Thomas Houseman,	M. E.,	Philadelphia,	Somerton.
Richards, Jack Evans,	Wh.,	do.	1823 Logan Sq.
Richards, Louis Harry, Jr.,	A.,	do.	206 S. 42d St.
Richardson, George Atwell,	M. E.,	Evanston, Ill.,	Dorm. 34 Rodney.
Riddell, Frank,	M. E.,	Bala.	
Ridgway, John Jay,	C. E.,	Philadelphia,	3214 Chestnut St.
Rile, Atlee Disston,	E. E.,	Germantown,	[5518 Morris St.]
Rios, José Antonio,	C. E.,	Mexico City, Mex.,	3443 Walnut St.
Roberts, Everett Wesley,	Wh.,	Lockport, N. Y.,	Dorm. 424 McKean.
Roche, Thomas J., Jr.,	A.,	Mt. Airy,	[212 Gowen Ave.]
Rodman, Alice Marie,	B.,	Philadelphia,	1011 S. 48th St.
Roeper, Anthony Frederick,	M. E.,	Reading,	3702 Locust St.
Rommel, William Charles,	E. E.,	Philadelphia,	1916 Montgomery Av.
Roth, Fred Edward,	C. E.,	do.	5418 N. 4th St.
Rowbottom, Joseph Tintsman,	M. E.,	Newport News, Va.,	Dorm. 23 Bodine.
Russell, Walter William,	M. E.,	Philadelphia,	1536 Glenwood Ave.
Salom, Pedro Grotjan,	E. E.,	do.	4702 Chester Ave.
Samter, Bertram I.,	Wh.,	Scranton,	Dorm. 32 Morris.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Sauter, Conrad John, Jr.,	M. E.	Philadelphia,	3131 Diamond St.
Sayre, James Russell,	Wh.	do.	959 N. 5th St.
Scanlon, Martinus Francis,	Arch.	Scranton,	Dorm. 43 E. F. Smith.
Schell, Harry Anthony,	M. E.	Philadelphia,	2262 N. 20th St.
Schellens, Pedro Louis,	A.	Groton, Conn.,	Dorm. 222 McKean.
Schimpf, Fred John,	C. E.	Philadelphia,	3601 N. 5th St.
Schimpf, John George,	Wh.	do.	2401 N. Second St.
Schlesinger, Edward Gustavus,	Wh.	do.	3230 Arlington St.
Schloss, Edwin Herman,	Wh.	do.	4216 Parkside Ave.
Schmidt, Rocsoe Conkling,	A.	do.	2721 N. 5th St.
Schoeneman, Sol Teller,	Wh.	do.	923 N. 19th St.
Scott, John Alexander, Jr.,	Wh.	Pittsburg,	3816 Spruce St.
Schwalb, William M.,	Arch.	Columbus Miss.,	3714 Locust St.
Scull, Meritt Abbott Halliday,	C. E.	Elkins Park.	Dorm. 333 Franklin.
Sechler, Jay Williams,	A.	Danville,	223 S. 38th St.
Secord, Walter Newton,	A.	Newton, Mass.,	3718 Locust St.
Seeger, Howard Raymond,	Ch. E.	Buffalo, N. Y.	[1009 Elm St.]
Seltzer, Leroy Wellington,	E. E.	Wilmington, Del.,	[316 Gates St.]
Shaeffer, Joseph William,	C. E.	Roxborough,	216 DeKalb Sq.
Shanaman, Samuel Logan,	Ch.	Annville,	
Sheaffer, William Paul,	Wh.	Wayne.	3332 Chestnut St.
Shelly, John Alfred,	Arch.	Harrisburg,	6801 N. 12th St.
Shelly, William Dayton,	A.	Philadelphia,	825 N. 24th St.
Shmidheiser, William August,	M. E.	do.	Dorm. Box 112.
Shoemaker, Clarence John,	Wh.	Greensburg,	[6366 Sherwood Rd.]
Shoemaker, Emanuel Hey,	C. E.	Overbrook,	Dorm. 22 Morgan.
Shryock, Bartlett Ward,	M. E.	Ft. Wayne, Ind.,	1319 Fairhill St.
Shubin, David Xerxes,	C. E.	Philadelphia,	3350 Walnut St.
Shultz, Wallace Luther,	M. E.	McKeesport,	Dorm. 245 Lippincott
Singer, Henry Frank,	Wh.	Philadelphia,	3337 Walnut St.
Sims, Joseph Patterson,	Arch.	do	2503 N. 19th St.
Slepin, Benjamin,	C. E.	do.	3928 Warren St.
Sloan, William Allan,	M. E.	do.	Dorm. 104 Brooks.
Smith, Albert Vernon,	Wh.	Williamsport,	123 S. 34th St.
Smith, Earle Lafayette,	C. E.	Beverly, N. J.	
Smith, Frederick Arnold,	Wh.	Danbury, Conn.,	1233 Spruce St.
Smith, Henry Joseph,	E. E.	Devon.	3400 Walnut St.
Smith, James Somers, 3d,	A.	Philadelphia,	1255 S. 19th St.
Smith, Ray Horton,	Wh.	Ridgway,	Dorm. 12 Bodine.
Smith, William DeFord,	Arch.	Philadelphia.	157 N. 20th St.
Spalding, Melvin Pratt,	Arch.	Cranford, N. J.,	614 Market St.
Sprecher, Isaac Leonard,	Wh.	Ephrata,	Dorm. Class of '87.
*Srednik, Elias,	Ch. E.	Philadelphia,	Dorm. 43 Morgan.
Starr, George Fairchild,	A.	Bethel, Conn.,	Dorm. 447 Lippincott
Stifel, Ernest Albert,	Wh.	Pittsburg,	1526 E. Montgomery
Stites, George Arthur,	Ch. E.	Honeybrook,	Ave.
Stortz, John,	E. E.	Philadelphia,	
Stout, Richard Weslord,	C. E.	Ocean Grove, N. J.,	102 S. 33d St.

\* Absent on leave for year.

Name.	Course.	Residence.	City Address.
Strahley, Carl Christoff,	Wh.,	Pittsburg,	Dorm. 301 Brooks.
Strahley, Lewis William, Jr.,	C. E.,	do.	Dorm. 302 Brooks.
Stretch, Elmer Royden,	C. E.,	Philadelphia,	1006 S. St. Bernard St [612 Berkley St.]
Sullivan, Elton Eugene,	Wh.,	Camden, N. J.,	Dorm. 450 Lippincott
Sykes, Lewis Blain,	Ch.,	Clearfield,	822 N. 63d St.
Szlapka, Thaddeus Louis,	A.,	Philadelphia,	Dorm. 46 Coxe.
Tait, Robert Lamkin,	A.,	Norfolk, Va.,	4242 Parkside Ave.
Teller, Jerome Long,	Wh.,	Philadelphia,	
Thayer, Edmund,	Wh.,	Chestnut Hill.	
Thompson, Henry La Rue,	Wh.,	Glenside.	
Thomson, Dann Andrew,	A.,	Collegeville.	
Tilghman, Benjamin Chew, Jr.,	C. E.,	Philadelphia,	Dorm. 228 Class of '87.
Tooker, Mark,	Wh.,	Decatur, Ill.,	Dorm. 422 McKean.
Trimble, James Alfred,	C. E.,	Overbrook,	[838 Highland Ave.]
Townsend, Harrison, Jr.,	Arch.,	Philadelphia,	4103 Baltimore Ave.
Transeau, Theodore Elmer,	C. E.,	do.	4228 N. 15th St
Trumbauer, Walter Hendricks,	A.,	do.	4913 Florence Ave.
Tyler, William Chambers,	Arch.,	Louisville, Ky.,	Dorm. 14 Bishop White.
Tyrrell, Hobert Stewart,	M. E.,	Buffalo, N. Y.,	Dorm. 44 Morgan.
Urizar, Julio de la Torre,	C. E.,	Buenos Aires, S. A.,	3229 Chestnut St.
Van Hoesen, Miller Purdy,	Wh.,	Rochester, N. Y.,	Dorm. 370 Hopkinson
Van Scoyoc, Albert John,	E. E.,	Altoona,	Dorm. 139 Provost Smith.
Van Sweringen, Budd Eakin,	A.,	Ft. Wayne, Ind.,	Dorm. 26 Morgan.
*Vieser, Fred Charles, Jr.,	E. E.,	Philadelphia,	4062 Parkside Ave
Viquez, Manuel Antonio,	C. E.,	San José, Costa Rica,	3313 Walnut St.
Villavicencio, Cesar, Jr.,	C. E.,	La Paz, Bolivia,	3931 Pine St.
Vrooman, Quinton C.,	E. E.,	Philadelphia,	4239 Walnut St.
Walker, Clarence Herman,	Ch. E.,	do.	1408 Tioga St.
Walker, Francis John, Jr.,	E. E.,	Erie,	Dorm. 231 Craig.
Walker, Earle Reed,	E. E.,	Ben Avon,	3931 Pine St.
Walter, Howard Andrew,	Ch. E.,	Dunmore,	3721 Spruce St.
Walton, Lewis Brosius,	Arch.,	George School,	3212 Summer St.
Ward, Ralph Detmar,	Wh.,	Pittsburg,	Dorm. 31 E. F. Smith.
Warner, William,	Wh.,	Philadelphia,	2830 Oxford St.
Warren, Frederick Parsons,	Arch.,	Three Oaks, Mich.,	Dorm. 33 E. F. Smith.
Watts, John Arthur, Jr.,	Ch.,	Germantown,	[510 Carpenter St.]
Webb, Carleton Braddock,	Wh.,	Haddonfield, N. J.	
Weber, John Malcolm,	A.,	Norristown.	[15 E. Weber St.]
Weil, Edwin H.,	Wh.,	Germantown,	[251 Hansberry St.]
Weiller, Leonard Albert,	Wh.,	Baltimore, Md.,	Dorm. 339 Foerderer.
Weimert, Fred Raymond,	Ch. E.,	Buffalo, N. Y.,	3718 Locust St.
Weiss, Bernhard Morris,	E. E.,	Philadelphia,	315 Pine St.
Welsh, John Thomas,	M. E.,	do.	774 S. 15th St.
Wentz, Edwin Mann,	Ch.,	Norristown,	[818 De Kalb St.]
Westney, Harry Leon,	Wh.,	Palmyra, N. J.,	
Wetherill, Charles August Heckscher.	Ch.,	Philadelphia,	2014 Walnut St.
Whitaker, Norman T.,	A.,	do.	776 N. 26th St.

\* Absent on leave for year.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
White, Errol,	A.,	Philadelphia,	2024 Chestnut St.
White, John,	E. E.,	Louisville, Ky.,	Dorm. 29 Morris.
Whiteside, Harold Custer,	A.,	Philadelphia,	Dorm. 233 Craig.
*Wiggins, J. Albert,	C. E.,	do.	"The Bartram."
Wilcox, Stanley Gladding,	Wh.,	do.	4808 Beaumont Ave.
Wilkinson, Kenneth Lawrence,	E. E.,	do.	1222 N. Frazier St.
Williamson, William Corkin,	Wh.,	do.	113 S. 37th St.
Wiler, Alfred Henry,	M. E.,	do.	4538 Spruce St.
Williams, Vernon Carroll, Jr.,	E. E.,	Germantown,	[424 W. Bringhurst St.]
Williams, Frederic Marsh,	C. E.,	Philadelphia,	836 N. 41st St.
Williamson, Frank F.,	A.,	do.	3401 N. 20th St.
Wilson, Arthur Howell,	A.,	do.	3609 Baring St.
Winne, Louis Albert,	E. E.,	Ardmore,	[124 Ardmore Ave.]
Wister, Rodman Mifflin,	Wh.,	Philadelphia,	1014 Spruce St.
Wolf, Charles Harrison,	C. E.,	do.	133 W. Susquehanna Av.
Wolf, Harry,	M. E.,	do.	133 W. Susquehanna Av.
Woll, Paul Emil,	Wh.,	do.	3316 Walnut St.
Wood, Edward Fitz Randolph,	Arch.,	do.	410 S. 15th St.
Wood, Jonathan Knight Williams,	C. E.,	Horsham,	128 S. 17th St.
Worrell, Howard Sellers,	E. E.,	St. Paul, Minn.,	Millbourne House, 63d and Market Sts.
Yang, Shen Fung Edward,	Wh.,	Hsiang Yang, China,	221 S. 36th St.
Yates, William Parmenter,	Wh.,	Elmira, N. Y.,	Dorm. 27 Bodine
Yerkes, Earle Pierce,	M. E.,	West Chester,	[606 S. Walnut St.]
Yocom, A. Duncan, Jr.,	A.,	Chester,	[202 E. 8th St.]
Young, Bruce,	E. E.,	Hutchinson, Kan.,	3342 Walnut St.
Young, Robert Luther,	C. E.,	Langhorne.	

\* Absent on leave, first term.

## STUDENTS IN THE TWO AND FOUR YEAR SPECIAL COURSES.

## STUDENTS OF THE FOURTH YEAR.

Name.	Course.	Residence.	City Address.
Benjamin, Rae D.,	M.,	Philadelphia,	1624 S. 5th St.
Davis, Florence Edna,	M.,	do.	3401 N. 15th St.
Hill, Philias Franklin,	M.,	do.	2415 E. Sergeant St.
Lay, Harry Robinson,	M.,	Grand Island, Fla.,	3608 Locust St.
Lyman, Mary Elizabeth,	M.,	Germantown,	[222 W. Horter St.]
Mallery, Helen,	M.,	Chestnut Hill.	
Newhall, Ellen Melissa,	M.,	Roxborough,	[4141 Manayunk Av.]
Read, Isabel O.,	M.,	Philadelphia,	2049 E. Dauphin St.
Reiff, Stanley Trotter,	M.,	Narberth.	
Shortland, Helen,	M.,	Philadelphia,	6303 Girard Ave.
Solt, R. Livingston,	M.,	do.	3816 Girard Ave.
Sutor Adele,	M.,	do.	4039 Baring St.
Winsor, Ellen,	M.,	Haverford.	

## STUDENTS OF THE THIRD YEAR.

Daumont, Zoe,	M.,	Philadelphia,	1233 S. 46th St.
Hicks, Ruth,	M.,	Bryn Athyn.	
Hoffner, W. Lane,	M.,	Philadelphia,	4124 Cambridge St.
Holton, Josie Mercedes,	M.,	do.	1717 N. 7th St.
Lahart, Thomas Gordian,	M.,	do.	315 N. 54th St.
Necker, Amelia Elizabeth,	M.,	do.	411 Vine St.
Osnis, Daisy Adella Hartman,	M.,	do.	2129 N. 9th St.
Roper, Marion Belle,	M.,	Bristol,	[224 Mill St.]

## STUDENTS OF THE SECOND YEAR.

Alstrom, Albert Frederick,	Wh.,	Springfield, Mass.,	Dorm. 389 Lippincott
Austin, William Horace,	Arch.,	Long Beach, Cal.,	Dorm. 51 Coxe.
Bardsley, Chester Arthur,	Wh.,	Philadelphia,	1535 Morris St.
Bauer, Dorothy,	M.,	do.	1514 Fairmount Ave.
Bear, Albert Gutheim,	Arch.,	New Orleans, La.,	Dorm. 20 Memorial.
Carrigan, William Seymour, Jr.,	Wh.,	Philadelphia,	3705 Walnut St.
Chappell, Rollo Mann,	Wh.,	Elgin, Ill.,	Dorm. 418 Franklin.
Costello, Dolores Marie,	M.,	Philadelphia,	1602 Poplar St.
Dawson, William Percy,	Arch.,	do.	561 N. 58th St.
Evans, Harold Stanley,	Wh.,	Scranton,	Dorm. 36 Morris.
Favorite, George Upton,	Wh.,	Chicago, Ill.,	144 N. Delaware Ave.
Ferry, Theodore Ross,	Arch.,	Altoona,	206 S. 37th St.
Flertzheim, Henry Augustus,	Wh.,	Milwaukee, Wis.,	Dorm. 312 Leidy.
*Fulton, Harry Aldus,	Arch.,	Belle Center, Ohio,	3615 Locust St.
Gebhart, Rollin E.,	Arch.,	Dayton, Ohio,	3614 Walnut St.
Goldberger, Morris Leopold,	Wh.,	Perth Amboy, N. J.,	3260 Sansom St.

\* Absent on leave first term, 1908-09.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Gould, Louise Telfair,	M.,	St. Simons Island, Ga.,	3445 Walnut St.
Hall, Lawrence H.,	Arch.,	Dayton, Ohio,	3614 Walnut St.
Hatch, Raymond Walter,	Arch.,	Boise, Idaho,	208 S. 36th St.,
Hentz, Carl W.,	Wh.,	Buffalo, N. Y.,	Dorm. 132 Craig.
Heller, Richard Henry,	Wh.,	Dubuque, Iowa,	Dorm. 21 Rodney.
Houck, Byron Clark,	Wh.,	Williamsport,	Dorm. 44 E. F. Smith.
Hummel, Frederick Charles,	Arch.,	Boise, Idaho,	123 S. 36th St.
Irish, Robert,	Wh.,	Norristown,	[925 Main St.]
Johnson, M. Stanley,	Wh.,	Luzerne,	3350 Walnut St.
Kirk, Charles T.,	Wh.,	Findlay, Ohio,	Dorm. 34 Bodine.
Kissinger, George Meade, Jr.,	Wh.,	Williamsport,	Dorm. 44 Bishop White.
Lamade, Walter G.,	Wh.,	do.	Dorm. 44 E. F. Smith.
Large, Spencer Sergeant,	Wh.,	Philadelphia,	2119 Pine St.
*Lauck, Jesse Fay,	Arch.,	Kansas City, Kan.	
Law, James Richard,	Arch.,	Madison, Wis.,	3805 Locust St.
Lee, Francis Robert,	Wh.,	Trenton, N. J.,	Dorm. 45 Rodney.
Longaker, Edwin Pancoast,	B.,	Philadelphia,	1402 N. 16th St.
Macfarlan, Kenneth,	Wh.,	do.	1805 Chestnut St.
Marx, Ralph Seward,	Wh.,	Bloomsburg.	
Megary, Howard D.,	Wh.,	Philadelphia,	603 N. 43d St.
Metheny, Samuel Alexander Sterrett,	M.,	do.	617 N. 43d St.
Miller, Florence Elizabeth,	M.,	do.	728 S. 18th St.
Miller, Joseph Cook,	Wh.,	Bridgeton, N. J.,	Dorm. 34 Memorial.
Murray, Helen Wilcox,	M.,	Philadelphia,	1411 Lombard St.
Nelson, Joseph,	Arch.,	Provo, Utah,	124 S. Harmony St.
Purdy, William C.,	Wh.,	Torresdale.	
Ray, George Nicholas,	Arch.,	Washington, D. C.,	3705 Walnut St.
Reed, Eugene C. A.,	Wh.,	Mansfield, Ohio,	3400 Walnut St.
Rinehart, Thomas Warden,	Arch.,	Baltimore, Md.,	Dorm. 426 Baldwin.
Ristine, Clara Lucinda,	M.,	Philadelphia,	811 N. 42d St.
Rodman, Hildegard E.,	M.,	do.	1011 S. 48th St.
Schmidt, Herbert Adolph,	Arch.,	San Francisco, Cal.,	208 S. 37th St.
Sharp, Walter Calvert,	Arch.,	Nashville, Tenn.,	Dorm. 42 Morgan.
Snyder, Frank Manning,	Wh.,	Newport,	Dorm. 33 Rodney.
Solis-Cohen, Leon,	B.,	Philadelphia,	1525 Walnut St.
Swartz, Frederick Lloyd,	Arch.,	Fresno, Cal.,	3707 Locust St.
Van Camp, Gilbert C.,	Wh.,	Indianapolis, Ind.,	Dorm. 11 Bishop White.
Wallace, George Bruce.,	Wh.,	Clearfield,	3529 Locust St.
Walsh, Thomas Francis,	Wh.,	Scranton,	Dorm. 33 Coxe.
Warner, Alberta Hinkle,	M.,	Duffryn Mawr.	
Webster, Claudeane Rebecca,	M.,	Philadelphia,	717 S. 16th St.
Wells, George Calvin,	Wh.,	do.	3212 Wallace St.

## STUDENTS OF THE FIRST YEAR.

Adams, Erick Archibald,	B.,	Wilkesbarre,	3708 Spruce St.
Anderson, Helge Andrew,	Arch.,	Chicago, Ill.,	Dorm. 34 Rodney.

\* Absent on leave, first term, 1908-09.

Name.	Course.	Residence.	City Address.
Ballou, De Forest, Jr.,	B.,	Cynwyd,	1405 Filbert St.
Bartholomew, Marshall Moore,	M.,	New York, N. Y.,	Haverford School, Haverford.
Benson, Emma Elizabeth,	M.,	Bryn Mawr	
Blakeslee, Colson Edward,	Wh.,	Du Bois,	68 N. 36th St.
Borzner, Andrew Charles,	Arch.,	Pelham,	89 W. Sharpnack St.
Brasher, William Asa, Jr.,	Arch.,	St. Louis, Mo.,	3612 Locust St.
Brock, Howard Fauntleroy,	B.,	West Chester;	1727 French St.
Broomall, Harold Shoemaker,	B.,	Chester,	[702 Madison St.]
Bulifant, Mark Dashiell,	Wh.,	Camden, N. J.,	[406 N. 2d St.]
Coar, Matthew Aloysius,	Wh.,	Scranton,	Dorm. 362 Baird.
Cumine, Jane Phillips,	M.,	Camden, N. J.,	[714 Washington St.]
Dixon, Thomas Fraser, Jr.,	Wh.,	Philadelphia,	3328 Walnut St.
Donavan, Cornelius Charles, Jr.,	B.,	Scranton,	3803 Spruce St.
Dullahan, Eugene Edward,	Wh.,	Houston, Texas,	610 N. 47th St.
Everts, Frank J.,	Arch.,	Lancaster,	Dorm. 428 Baldwin.
Felton, William Scott,	B.,	Philadelphia,	5305 N. ad St.
Ferber, Fred George,	Wh.,	Scranton,	24 S. 34th St.
Garry, George,	Wh.,	Lawrence, Mass.,	3739 Spruce St.
Gibbs, Martin Enoch,	B.,	West Chester,	[522 E. Miner St.]
Girvin, Robert Weaver,	Wh.,	Leola.	
Goode, Robert James, Jr.,	B.,	Gastonburg, Ala.,	Dorm. 151 N.Y. Alumni.
Guise, J. Warren,	Wh.,	Findlay, Ohio,	Dorm. 436 Baird.
Hench, Nevin Frederick,	Wh.,	York,	Dorm. 58 Coxe.
Hessenberger, Frank LeRoy,	Wh.,	Harrisburg,	3332 Chestnut St.
Hinman, Clarence George,	Arch.,	Minneapolis, Minn.,	3617 Locust St.
How, Harold Waldron,	Wh.,	New York, N. Y.,	Dorm. 25 Bodine.
Hupp, John Cox, ad,	B.,	Wheeling, W. Va.,	Dorm. 34 Morgan.
Ivey, Edwin John,	Arch.,	Seattle, Wash.,	3605 Sansom St.
Jemne, Magnus,	Arch.,	Ashland, Wis.,	27 N. 34th St.
Jones, J. Walter,	Wh.,	Ridley Park,	Dorm. 10 Bishop White.
Keyser, Charles Maris, Jr.,	Arch.,	Baltimore, Md.,	300 S. 36th St.
Kuhn, John Lowry,	Arch.,	Oakmont,	3619 Sansom St.
Low, Harry Casselberry,	Arch.,	Paulsboro, N. J.	
Lynott, Matthew Joseph,	Wh.,	Scranton,	Dorm. 362 Baird.
McCracken, Thomas R.,	Wh.,	Mahaffey,	3339 Woodland Ave.
Martin, Herbert John,	Wh.,	Buffalo, N. Y.,	4504 Chester Ave.
Millar, James,	Arch.,	Washington, D. C.,	Dorm. 53 Rodney St.
Moore, William Wesley,	M.,	Philadelphia,	2318 N. Howard St.
Nash, James Lewis Hatton,	B.,	Portsmouth, Va.,	3401 Walnut St.
Padilla, Alfonso,	B.,	Ponce, Porto Rico,	3258 Chestnut St.
Pampel, Heber David,	Arch.,	Kansas City, Mo.,	3605 Sansom St.
Patchell, Fred E.,	Wh.,	Hicks Run,	68 N. 36th St.
Roberts, Newton Theodore,	Wh.,	Scranton,	Dorm. 33 Coxe.
Rosenthal, Marcus Hess,	Wh.,	Mt. Vernon, Ohio,	Dorm. 10 Wilson.
Rutan, Phay B.,	Wh.,	Elmira, N. Y.,	3445 Walnut St.
Sheehan, William Coronado,	B.,	Chestnut Hill.	
Shoemaker, Josephus Rex,	Wh.,	Plainfield, N. J.,	3705 Walnut St.
Smith, Owen Fithian,	Wh.,	Indianapolis, Ind.,	3475 Sansom St.
Sommer, Anna Ella,	M.,	Philadelphia,	1806 N. 27th St.
Stein, Theodore P., Jr.,	Wh.,	Indianapolis, Ind.,	Dorm. 11 Bishop White.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Stubbs, Robert Haines,	B.,	George School,	3212 Summer St.
Sullivan, Harry Gross,	B.,	Philadelphia,	4833 Hazel Ave.
Thompson, George Harry,	B.,	Oxford, NovaScotia, Dorm. 31	Wilson.
Twitchell, Stanley David.,	Arch.,	New Haven, Conn.,	3723 Spruce St.
Urling, Neel W.,	Arch.,	Washington, D. C.,	3263 Woodland Ave.
Van Name, Frank Clinton.,	Arch.,	Brooklyn, N. Y.,	3739 Locust St.
Wadsworth, Reginald Jeffrey,	Arch.,	Westmount, Canada, Dorm. 43	Bishop White.
Weber, John Francis,	B.,	Florence, N. J.,	214 St. Mark's Sq.
Wolff, Katharine,	M.,	Philadelphia,	229 S. 42d St.
Wood, Frank A.,	Wh.,	Conshohocken.	
Yerkes, Jonathan,	Wh.,	Jacksonville, Fla.,	Dorm. 113 Foerderer.
Zellner, Louis De Grief,	Arch.,	New Philadelphia,	3601 Sansom St.
		Ohio.	

## PARTIAL STUDENTS.

Altman, Harry W.,	Arch.,	Uniontown,	3435 Walnut St.
Anthony, William Horatio,	A.,	Fogo, Newfoundland,	50th and Woodland Ave.
Arnold, Merrill Dayle, Jr.,	Wh.,	Knoxville, Tenn.,	908 Spruce St.
Armstrong, George Armer,	Ch.,	Philadelphia,	3957 Brown St.
Aviles, A. Virgilio,	A.,	Ecuador, S. A.,	3348 Walnut St.
Barakat, Anees Brayton,	Wh.,	Philadelphia,	256 S. 44th St.
Blogg, Herbert Ainsworth,	Arch.,	Seattle, Washington, Dorm. 222	McKean.
Braun, W. F. Harold,	Wh.,	Germantown,	[250 Pelham Rd.]
Bright, Joseph Edwards,	Wh.,	Mobile, Ala.,	3731 Spruce St.
Browning, Pallus Powell,	Wh.,	Washington, D. C.,	3705 Walnut St.
Campbell, Donald Elliott,	Wh.,	Philadelphia,	6396 Drexel Road.
Campbell, William Martin,	Arch.,	Germantown,	[413 School House Lane.]
Carns, Charles Newell,	Wh.,	Philadelphia,	2328 Madison Sq.
Conley, William Taylor,	Wh.,	Portland, Me.,	Dorm. 47 Coxe.
Cooke, Armistead Mason,	C. E.,	Norfolk, Va.,	3604 Walnut St.
Cortright, Donald Nathan,	A.,	Mauch Chunk,	3641 Locust St.
Crane, Frederick Peabody,	Wh.,	Bloomfield, N. J.,	3529 Locust St.
Crassweller, Harold Douglas,	Wh.,	Duluth, Minn.,	Dorm. 440 Hopkinson
Crespo, Alvaro,	M. E.,	Mexico City, Mex.,	108 S. 33d St.
Crossley, William Buck,	Wh.,	Middleboro, Mass.,	Dorm. 21 Bishop White.
Cumming, George Archibald,	Wh.,	Pawtucket, R. I.,	3743 Locust St.
Cummins, James Dirickson,	A.,	Philadelphia,	Divinity School, 50th and Woodland Ave.
Dalton, William Patrick,	Wh.,	Wamford, N. Y.	
Dawson, Benjamin Frederick,	Wh.,	New York, N. Y.,	1906 Sansom St.
Dooner, Albert Joseph,	A.,	Philadelphia,	1734 Master St.
Day, Samuel Harvey.	A.,	Wilmington, Del.,	Dorm. 204 Brooks.
*Drueding, Bernard John,	E. E.,	Philadelphia,	517 W Girard Ave.
Eaton, Warren Edwin,	Wh.,	Norwich, N. Y.,	Dorm. 108 Leidy.
Ehrhart, John Phillip,	Ch.,	Jamestown,	3745 Spruce St.
Engelhardt, Theobald Harry.	Arch.,	Brooklyn, N. Y.,	Dorm. 251 N.Y. Alumni

\* Absent on leave for year.

## STUDENTS.

655

Name.	Course.	Residence.	City Address.
Esherick, George, Jr.,	M. E.,	Philadelphia,	3926 Locust St.
Favell, Eugene George,	Wh.,	Chippewa Falls, Wis.,	3475 Sansom St.
Fisher, Paul Carter,	Ch.,	Germantown,	[5512 Wayne Ave.]
Flanigan, William Herbert,	Arch.,	Woodbury, N. J.	3621 Locust St.
Foster, A. Lyman,	Wh.,	Lowell, Ind.	3407 Walnut St.
Foulke, George R.,	A.,	West Chester,	3537 Locust St.
Fowler, Walter McKnight,	C. E.,	Philadelphia,	3533 Locust St.
Friedman, Edward Herman,	Wh.,	do.	624 S. 7th St.
Galey, Harry Charles Jr.,	B.,	do.	4544 N. 18th St.
Gallagher, Frank James,	Wh.,	do.	4037 Baring St.
Gerber, Lipman,	Wh.,	Tuckerton, N. J.,	Dorm. 126 Baldwin.
Giles, William La Roy,	C. E.,	Carbondale, Pa.,	215 S. 33d St.
Gruhler, William L.,	Wh.,	Germantown,	[219 High St.]
Hanrahan, John Benedict,	Wh.,	Lawrence, Mass.,	Dorm. 345 McKean.
Hansell, Dudley Rex,	E. E.,	Bougher, N. J.,	8 S. 18th St.
*Hartje, Richard, Jr.,	A.,	Pittsburg,	[Dunmoyle St.]
Hill, George Channing Haddock,	Wh.,	Philadelphia,	4224 Chestnut St.
Hottle, Howard Pierce,	Wh.,	Germantown,	[442 Queen Lane.]
Howard, Russell Griffith,	Arch.,	Philadelphia	3601 Market St.
Hunter, Rolland Mitchell,	A.,	do.	300 S. 36th St.
Hurd, Jerome Stillwell,	A.,	do.	860 N. 41st St.
Jenkins, James M.,	C. E.,	do.	826 N. Broad St.
Jennings, William Joseph,	Wh.,	do.	5226 Jefferson St.
Johnson, Wallace Ford,	Wh.,	Cynwyd.	
Jones, David Evan,	C. E.,	Lansdowne,	[70 S. Wycombe Ave.]
Karuza, Roman Laurentius,	Wh.,	Philadelphia,	1937 Dennie St.
Kawasaki, Hajime	Wh.,	Tokio, Japan,	3331 Walnut St.
Katz, Joseph Maurice,	Ch.,	York,	Dorm. 406 Brooks.
Keck, Solomon M.,	C. E.,	Allentown,	Dorm. 44 Coxe.
Keeney, Susan Dorothea,	B.,	Philadelphia,	108 N. 16th St.
Kelly, John Patrick,	Ch.,	do.	127 S. 24th St.
Kennedy, Peter John,	Wh.,	Holyoke, Mass.,	3708 Spruce St.
Knebelman, Abraham,	C. E.,	Odessa, Russia,	1116 N. 40th St.
Landis, Harold Swindells,	C. E.,	Philadelphia,	3533 Locust St.
Landmesser, Ralph Worrall,	M. E.,	Wilkesbarre,	Dorm. 32 Wilson.
Lockwood, Richard Bronson,	Wh.,	Buffalo, N. Y.,	268 S. 38th St.
Long, Brice Hayden,	Arch.,	Westmoor,	3617 Locust St.
Lutz, Harry Heber,	Wh.,	Clairton,	3731 Spruce St.
McCloud, Robert Alestine,	Wh.,	Philadelphia,	1705 Spruce St.
McCreight, Donald,	Wh.,	Du Bois.	
McDowell, William Hunter,	C. E.,	Narberth,	3604 Walnut St.
McKenna, John Joseph, Jr.,	Wh.,	Philadelphia,	6323 Race St.
Macfarlane, Carrington,	B.,	do.	3457 Chestnut St.
Mackey, Thomas Millspaugh,	Ch.,	do.	714 N. 48th St.
Mancera, Ernesto,	C. E.,	Mexico City, Mex.,	3741 Spruce St.
Meller, Harry Bertine,	Ch.,	Philadelphia,	3839 Hamilton St.
Methény, David Gregg,	A.,	do.	1022 S. 47th St.
Miller, Charles Frederick,	Wh.,	do.	1533 N. 8th St.

\* Absent on leave for year.

## THE COLLEGE.

Name.	Course.	Residence.	City Address.
Miller, Harrison,	Ch.,	Germantown,	[53 E. Walnut Lane]
Myers, John Warren,	Arch.,	Philadelphia,	321 Washington Ave.
Nakahara, Genji,	B.,	Osaka, Japan,	3416 Sansom St.
Newman, Lloyd Davis,	Wh.,	Buffalo, N. Y.,	Dorm. 20 Bodine.
Pennell, Francis Whittier,	B.,	Wawa.	
Price, Thornton Walton,	C. E.,	Plymouth Meeting,	3417 Locust St.
Protheroe, Howard Probert,	Ch.,	Scranton,	3709 Locust St.
Ritter, John Abraham,	A.,	Narberth.	
Reading, John Herbert, Jr.,	Wh.,	Philadelphia,	1811 Green St.
Robinson, Louis Barclay,	Wh.,	do.	6342 Drexel Rd.
Ross, Mary Anna,	B.,	Williamsport,	5224 Chester Ave.
Sallada, Abner Belmont,	Wh.,	Germantown,	Dorm. 12 Morgan.
Sartori, Frank Augustus, Jr.,	A.,	Philadelphia,	[6730 Emlen St.]
Schenck, John Henry,	Arch.,	Olympia, Wash.,	221 S. 36th St.
Schmidt, Frederick William,	Wh.,	Philadelphia,	Dorm. 41 Morgan,
Scott, James Hutchinson, Jr.,	A.,	Frenchtown, N. J.,	300 S. 36th St.
Scott, Wilmer E.,	Arch.,	Ft. Caswell, N. C.,	3802 Spruce St.
Schumm, Herman Charles,	A.,	Trenton, N. J.,	Dorm. 227 Baldwin.
Scudder, John Montgomery,	Wh.,	Cuba, N. Y.,	Dorm. 223 McKean.
Sibley, Walter F.,	Wh.,	Philadelphia,	268 S. 38th St.
Silliman, Maxwell,	Ch.,	do.	857 N. 6th St.
Simonin, Frederick, L.,	M. E.,	Lockport, N. Y.,	3621 Locust St.
Smith, Raymond L.,	A.,	Mt. Carmel,	Dorm. 132 Craig.
Stief, Peter Michel,	Wh.,	Pittsburg,	Dorm. 324 Franklin.
Succop, Charles Herman,	Wh.,	Philadelphia,	234 Baird.
Swab, William,	M. E.,	do.	2419 Columbia, Ave.
Sylvester, Guy Carter,	M. E.,	Hagerstown, Ind.,	1821 Wallace St.
Teetor, Ralph R.,	A.,	Chestnut Hill,	3735 Spruce St.
Thayer, Alexander Dallas,	Wh.,	Wilkesbarre,	3328 Walnut St.
Theis, Stanley, J.,	Wh.,	Philadelphia,	Dorm. 121 McKean.
Thompson, Rodman Elliott,	Wh.,	Bogota, Colombia,	3337 Walnut St.
Torre, Ignacio de la,	S. A.,		1105 Spruce St.
Trumbower, Charles Kincaid, Jr.,	Arch.,	Pittston,	Dorm. 128 Class of '8;
Ullrich, Jesse Rogers,	A.,	Philadelphia,	2903 Columbia Ave.
Uyeda, Goshitake,	E. E.,	Tokyo, Japan,	Dorm. 17 Bodine.
Van Trump, Samuel Newbold,	C. E.,	Edge Moore, Del.	
Walker, Charles Wellington, Jr.,	Arch.,	Stratford, Conn.,	Dorm. 51 Rodney.
Walker, Wallace Delamater,	Wh.,	Meadville,	Dorm. 238 Pitler.
Wattles, Raymond William,	Wh.,	Buffalo, N. Y.,	Dorm. 131 Craig.
Wetherill, John Price, Jr.,	Ch.,	Philadelphia,	2014 Walnut St.
Watts, William Sherwood, Jr.,	M. E.,	Newark, N. J.,	Dorm. 35 E. F. Smith.
Williams, Earle Kress,	Wh.,	Allentown,	3316 Walnut St.
Williams, Edward,	Wh.,	Scranton,	Dorm. 37 Morgan.
Williams, John Sylvanus,	Wh.,	Wilkesbarre,	204 S. 36th St.
Williams, Seymour,	Arch..	Tottenville, Staten Island, N. Y.,	Dorm. 50 E. F. Smith.
Witman, William Walter,	Arch.,	Reading,	3344 Walnut St.
Wood, Oliver Gillman,	Wh.,	Philadelphia,	3258 N. Broad St.
Yost, Charles Walter,	Ch.,	Lickdale,	3533 Locust St.
Zalesky, Charles Ralph,	Arch.,	Cedar Rapids, Ia.,	27 N. 34th St.
Zehetner, Arthur W.,	M. E.,	Dubuque, Ia.,	3244 Sansom St.

## STUDENTS TAKING COURSES FOR TEACHERS.

Name.	Residence.	City Address.
Abbett, Leon,	Philadelphia,	1615 Wallace St.
Ackerman, Oscar W.,	Ashbourne.	
Adams, Annie,	do.	1729 Bainbridge St.
Adams, Isabella Pattison,	do.	911 Corinthian Ave.
Aitken, Ellen M. M.,	Morristown, N. J.,	[223 N. Church St.]
Albrecht, Elizabeth Broadwater,	Philadelphia,	1800 Green St.
Anderson, Elizabeth Neely,	do.	1720 N. 19th St.
Andrews, Katharine Anne,	Lansdowne.	
Anné, Margaret Craig,	Philadelphia,	3753 N. 15th St.
Anthony, William Horatio,	Fogo, Newfoundland,	Woodland Ave. and 50th St.
Ashby, Harriet Elisabeth,	Bryn Athyn.	
Athey, Katharine,	Philadelphia,	3704 Locust St.
Ayer, Margaret Breck,	Lincoln,	4501 Chester Ave.
Balderton, Laura,	Woodstown, N. J.	
Ball, Rebecca Whitman,	Frankford,	4445 Frankford Ave.
Bane, Anna W.,	Kennett Square.	
Bard, Ruth Smith,	Mt. Airy,	[23 E. Mt. Pleasant Av.]
Bates, Ernest,	Philadelphia,	3340 Sergeant St.
Batt, Owen Elton,	Moores.	
Baylson, Mary,	Philadelphia,	1413 S. 23d St.
Bechtel, Mary D.,	do.	39 N. Paxon St.
Bell, Emily Esther,	Haddonfield, N. J.	
Bell, Katharine,	Marysville,	[Ardmore.]
Bendig, Frederick H.,	Philadelphia,	1210 S. 46th St.
Bennett, Norma Bersha,	Trenton, N. J.	
Berman, Frances,	Philadelphia,	1820 N. 21st St.
Bernheimer, Florence Pauline,	do.	3324 N. Gratz St.
Berry, Bess Florence,	Chester,	[910 Barclay St.]
Birch, Ethel Shepherd,	Philadelphia,	5229 Walnut St.
Birch, Lillie Watson,	do.	5229 Walnut St.
Birk, Florence E.,	do.	3201 Clifford St.
Birtwell, Alice,	Chester.	
Bisset, Mary Camilla,	Philadelphia,	333 Tasker St.
Bloch, Carrie,	do.	922 S. 18th St.
Boice, Ella Teresa,	Kennett Square.	
Boileau, Horace Tippin,	Philadelphia,	1535 N. 15th St.
Bonney, Lesley Olga,	do.	1326 Divinity Pl.
Bonstein, Ellen Stark,	Pittston,	[Darby.]
Booth, Helen McCall,	Philadelphia,	2219 N. Camac St.
Borden, Henry Clay,	do.	3727 Spruce St.
Borden, H. Clay (Mrs.),	do.	3727 Spruce St.
Borden, Lydia Prichett,	Manoa,	1412 Euclid Ave.
Bowman, Amy C.,	Philadelphia,	2029 N. 17th St.
Breidenbach, H. Leon,	Boyertown.	
Briggs, (Mrs.) Caspar Warren	Philadelphia,	The Berkshire, 15th and Walnut Sts.

## THE COLLEGE.

Name.	Residence.	City Address.
Brown, Helen Hunt Jackson,	Collingswood, N. J.	
Brown, Wilbur Janes,	Philadelphia,	1617 N. 52d St.
Brownwell, Helen Seal,	do.	5032 Pine St.
Buchanan, Mary Foss,	Trenton, N. J.	
Buell, Frances Margarita,	Bryn Athyn.	
Bullock, Alice Elizabeth,	West Chester.	
Burr, Mary Grafton,	Philadelphia,	125 S. 23d St.
Butchenhart, Lillie Elizabeth,	Port Deposit, Md.,	607 Brown St.
Cadwallader, Laura Hanes,	Philadelphia,	1711 N. 17th St.
Cain, Florence A.,	do.	5039 Upland St.
Campbell, Willard Smith,	Norristown.	
Campion, Anna Cooper,	Philadelphia,	3927 Pine St.
Carroll, Franklin Bache,	do.	617 S. 16th St.
Carter, Rebecca,	Germantown,	[5356 Knox St.]
Chadbourne, John Lodge,	Cynwyd.	
Chadwick, Eva May,	Germantown,	[58 E. Haines St.]
Chamberlain, Newton Merrill,	Philadelphia,	3649 N. Mervine St.
Chappell, Jane Barnshaw,	Roxborough,	[235 Roxborough Av.]
Chase, Irene B.,	Jenkintown,	[260 Mather Ave.]
Cheyney, Mabel,	Atlantic City, N. J.,	[112 S. Penna. Ave.]
Chidlaw, Mary Hanmer,	Philadelphia,	2315 Parrish St.
Church, Mabel,	do.	1800 Green St.
Claffy, Eleanor Veronica,	do.	234 S. 45th St.
Clark, Bertha May,	do.	125 S. 36th St.
Colladay, Margaret Y.,	do.	Lorraine Hotel, Broad St. and Fairmount Av.
Conklin, J. Russell,	do.	3531 Locust St.
Cooper, Elizabeth R.,	West Grove.	
Coppes, Augustus Barnatus,	Philadelphia,	2166 N. 32d St.
Corbett, Mary M.,	do.	946 N. 43d St.
Cope, Frances Danforth,	Germantown,	[6504 Germantown Av.]
Cornell, Ella Crosby,	Wilmington, Del.	
Cramp, Laura Grace,	Philadelphia,	1618 Tioga St.
Crider, Edna Lillian,	do.	4501 Chester Ave.
Croasdale, Caroline,	Frankford,	[1672 Margaret St.].
Dailey, Mabel Anna,	Philadelphia,	4918 Kingsessing Av.
Dalton, Lillian,	do.	3729 Locust St.
Darnell, Florence H.,	do.	1819 Berks St.
Davis, Emma,	Johnstown,	331 S. 13th St.
Davis, Frances L.,	Philadelphia,	1813 Wallace St.
Davis, H. N.,	Willow Grove.	
Day, Olive S.	New Haven, Conn.,	911 S. 47th St.
Devine, Agnes Mary,	Philadelphia,	1137 Venango St.
Doolittle, Hilda,	Upper Darby.	
Doughton, Isaac,	Phoenixville.	
Doughty, Addison Tracy,	Magnolia, N. J.	
Doyle, Martha W.,	Chester,	[205 E. Broad St.]
Duerr, Elsa Rosina,	Mt. Airy,	[115 W. Mt. Pleasant Ave.]
Duffield, Helen Norris,	Philadelphia,	3932 Brown St.
Dunbar, Jenny,	do.	2132 Federal St.

Name.	Residence.	City Address
Durgin, Mary Elizabeth,	Port Deposit, Md.,	834 N. 7th St.
Du Val, Jessie Cuddy,	Philadelphia,	1607 Park Ave.
Eaton, Anne Clarke,	do.	1929 Mt. Vernon St.
Edwards, Adelaide Frances,	Plymouth,	5800 Woodland Ave;
Elkinton, Anna Rhoads,	Philadelphia,	3605 Powellton Ave.
Ely, M. Florence,	Quakertown.	
Emrey, J. Thornton,	Philadelphia,	148 N. 21st St.
Emrey, Miles L.,	do.	1905 Mt. Vernon St.
Erben, M. Alice,	do.	1612 Wallace St.
Evans, Elizabeth,	do.	1754 N. 25th St.
Evans, Marie Belle,	do.	5167 Jefferson St.
Farbish, Sydney Allmayer,	do.	3216 Monument Ave.
Farley, Joanna Christina,	do.	2130 S. 57th St.
Fellows, Helen Christine,	Wilmington, Del.	
Fisher, Sarah Ellen,	Philadelphia,	2311 N. Bouvier St.
Flisher, Margaret van Valzah,	do.	1702 N. 22d St.
Folker, Marian H.,	do.	1343 W. Somerset St.
Foulkrod, Emily,	Frankford,	[1534 Harrison St.]
Fox, Agnes May,	Philadelphia,	634 N. 12th St.
Fox, Hannah Ashley,	do.	634 N. 12th St.
Franklin, Isabel Wood,	do.	2316 Parrish St.
Frebe, Katherine,	do.	2160 E. Letterly St.
Fretz, Frances Grace,	do.	1834 N. Camac St.
Furman, Catharine M. K.,	Trenton, N. J.,	[420 Princeton Ave.]
Gainer, Bessie Valentine,	Philadelphia,	223 S. 38th St.
Gallery, Mary Cecelia,	Media,	[27 E. 2d St.]
Galloway, Lillian May,	Moores.	
Gardner, Mary Alice,	Ardmore,	1743 N. 15th St.
Garvin, Wilhelma Charlotte,	Eldon, Mo.,	West Chester.
Gerson, Agnes Zerlina,	Philadelphia,	3866 Girard Ave.
Gifford, George Belvin,	Jenkintown.	
Gilchrist, Ella J.,	Philadelphia.	
Gilmour, Dora Yard,	Germantown,	[54 Harvey St.]
Gladfilter, Howard Baer,	Philadelphia,	5232 Chancellor St.
Godfrey, Marion Eldredge,	do.	2046 N. 13th St.
Gomersall, Edith B.,	Germantown,	[5345 Lena St.]
Goodspeed, Arthur W. (Mrs.)	Philadelphia,	4325 Sansom St.
Gottschalk, Joseph Moreau,	do.	2005 N. 31st St.
Grandchamp, Adelaide P. de.	do.	1316 Spruce St.
Grassmueck, Ernestine,	do.	497 American St.
Grindrod, Irvin S.,	do.	33d and Clearfield Sts.
Groff, Wilmer Krause,	Jenkintown.	
Guil, Claudia Berenice,	Norristown,	[5 E. Elm St.]
Gyger, Mary Campbell,	Moores.	
Haas, Laura Blanche,	Philadelphia,	3312 Powelton Ave.
Hadly, Helen Amanda,	Frankford,	[2218 Bridge St.]
Haines, Edith Evelyn,	Vincentown, N. J.	
Hanley, Bessie Graham,	Philadelphia,	1255 N. 10th St.
Hanna, Anne Bonner,	do.	2022 E. Dauphin St.
Harlow, Helen,	Edge Hill.	
Harper, Mary Higbee,	Williamstown, N. J.	

## THE COLLEGE.

Name.	Residence.	City Address.
Hartzell, Winfield Roscoe,	Norristown,	N. E. Manual Training School.
Hartzler, Alice E.,	Philadelphia,	1619 N. 17th St.
Hatzfeld, Florence Amanda,	do.	2110 N. 20th St.
Haydock, Mary Thornton,	do.	2123 Locust St.
Hegarty, Margaret Regina,	do.	634 N. 36th St.
Hélé, Edna M.,	Germantown,	[4916 Main St.]
Hellyer, George Warren,	Kennett Square.	
Helms, M. Ella,	Bridgeport, N. J.	
Henry, Harrison B.,	Richland Centre.	
Herold, Ernest Leo,	Philadelphia,	932 N. 11th St.
Hibbs, Elizabeth L.,	Trenton, N. J.,	[838 Edgewood Ave.]
Higgins, Laura Alberta,	Higginsville, N. S.,	Bridgeton, N. J.
Hildreth, Lucile Alton,	Wilmington, Del.,	[915 Linden St.]
Hilson, Marie Louise Hent,	Trenton, N. J.,	[128 W. State St.]
Himelright, Margaret Elizabeth,	Glenolden.	
Hitchens, Ethel Bennett,	Sharon Hill.	
Hoffman, Edith Belle,	Philadelphia,	1823 N. Van Pelt St.
Holme, Elizabeth D.,	Salem, N. J.	
Holmes, Annie Isabelle,	Philadelphia,	4120 Parkside Ave.
Hoover, Helen Angela,	do.	879 Highland Ave.
Horn, Blanche Campbell,	do.	1538 S. 58th St.
Horstick, Simon Motter,	do.	2005 S. Broad St.
Howard, Sarah,	Chester,	[234 W. 5th St.]
Hunsicker, John Rudolph,	Downingtown.	
Hutchinson, Cora Robertson,	Philadelphia,	3407 Baring St.
Immell, Ruth,	Chambersburg,	5503 Germantown Ave.,
Ireland, Loretta Ferguson,	Merchantville, N. J.	Germantown.
Jackson, Helen,	Philadelphia,	
James, Elizabeth Kingston,	do.	4438 Sansom St.
Jenkins, Martha Campbell,	Camden, N. J.,	4124 Westminster Ave.
Johnson, Alice Anna,	Newport, Del.,	[318 Cooper St.]
Jones, Elizabeth,	Philadelphia,	115 S. 22d St.
Jones, Laura May,	Manayunk.	2243 W. Thompson St.
Jones, Lila Strong,	Philadelphia,	635 N. 22d St.
Jordan, Janet Gordon,	do.	2428 Spruce St.
Josaphare, Maud Coán,	do.	45 N. Robinson St.
Kauf, Marie A.,	Hastings, Nebraska,	2807 Oxford St.
Keller, Anna M.,	Philadelphia,	1854 N. 13th St.
Kelly, Katharine Beatrice,	do.	913 S. 13th St.
Kershaw, William Louis,	do.	2823 N. 11th St.
Kervey, Elinore Baily,	Media,	[27 E. 2d St.]
Kessler, Marion Wallace,	Philadelphia,	1923 S. Broad St.
Keys, Ella Reed,	do.	2102 Spg. Garden St.
King, Florence B.,	do.	3515 Hamilton St.
Kenney, Anna M.	do.	5741 Lansdowne Ave.,
Kirchner, Marie A.,	Germantown,	[108 W. Sharpnack St.]
Kirk, Elizabeth,	Philadelphia,	1238 Tucker St.
Kirkpatrick, Aileen M.,	do.	241 S. 44th St.

## STUDENTS.

Name.	Residence.	City Address.
Kleefeld, Anna Christine,	Philadelphia,	628 N. 34th St.
Klein, Mina R.,	Salem, N. J.	
Knapp, Elizabeth,	Philadelphia,	1731 N. 18th St.
Knauer, Elsie Margaret,	do.	215 N. Lawrence St.
Knerr, Clara May,	Spring City.	
Krouse, Amelia Louisa,	Philadelphia,	1605 N. 9th St
Krutzki, Olga H.,	do.	333 S. 13th St.
Kulp, Mathilda G.,	do.	4503 Regent St.
Kyle, Mary K.,	do.	703 W. Erie Ave.
Laib, Nell Virginia,	do.	3112 Montgomery Ave.
Lancaster, Antoinette,	do.	2229 Spruce St.
Landis, Henry Garges,	Bainbridge, Ind.,	4116 Reese St.
Lane, Birde Elizabeth,	Philadelphia,	246 S. 44th St.
Lapatnikoff, Charlotte,	do.	3116 Clifford St.
Larkin, Mary M.,	do.	830 Highland Ave.
Latimer, J. D.,	do.	4006 Haverford Ave.
Ledwith, Jean Bryce,	do.	1717 Ontario St.
Lee, Ethel Maria,	Camden, N. J.,	[451 Trénton Ave.]
Liggett, Sara Guest,	Glen Moore,	50 N. 53d St.
Lindale, Grace,	Philadelphia,	3459 Walnut St.
Linton, Anne,	do.	434 S. 40th St.
Linton, Elizabeth,	do.	434 S. 40th St.
Lohr, J. Banks,	Millerstown,	Fox Chase.
Lohr, Nellie Welsh,	Philadelphia,	1716 Baily St.
Loux, Ida Viola,	do.	5240 Catharine St.
Loux, Susanna Mary,	do.	5240 Catharine St.
Lysle, Hannah Effie,	Landenburg,	1129 S. 46 St.
McAlpine, Martha,	Melrose Park,	57th and Spruce Sts.
McClellan, Isabel Clarice,	Coatesville.	
McCoy, Margaret Jacobs,	Philadelphia,	1301 Spg. Garden St.
McCully, Elizabeth B.,	Camden, N. J.,	[508 N. 4th St.]
McDermott, Rosa,	Philadelphia,	65 N. 34th St.
McLaughlin, Emma Jane,	do.	23d and Lombard Sts.
McNeal, Margaret A.,	Chester,	[909 Parker St.]
Mackay, Martha Ackerman,	Philadelphia,	2911 N. 5th St.
Maier, Julia M.,	Royersford.	
Makiver, Lillian,	Media.	
Mather, Ella Jane,	Radnor.	
Matthews, Harriet Emma,	Conshohocken.	
Maull, Catharine C.,	Lewes, Del.,	Riverside, N. J.
Mayer, Marie Christine,	Philadelphia,	619 N. 6th St.
Mayor, Kate,	do.	3862 Poplar St.
Merriman, Elsie M.,	do.	4015 Baring St.
Merriman, Lillian A.,	do.	4015 Baring St.
Merritt, Adeline Kerr,	Easton, Md.,	4025 Baring St.
Michener, M. Anna,	Philadelphia,	4512 Regent St.
Miles, Sarah Evelyn,	Manayunk,	[129 Gay St.]
Miller, Alice Etta,	Overbrook,	[6055 Drexel Rd.]
Miller, Hannah Pennock,	Philadelphia,	1932 Wallace St.
Minnig, Frank Raymond,	do.	5210 Webster St.
Mongel, Rosalia M.,	do.	3950 Parrish St.

## THE COLLEGE.

Name.	Residence.	City Address.
Montanye, Edwin Yerkes,	Holmesburg,	[Crispin St.]
Montanye, Maltida Rowland,	do.	[Crispin St.]
Moon, Jane Chase,	Morrisville.	
Moore, Elizabeth,	Conshohocken.	
Moore, Sara Frances,	Woodstown, N. J.	
Morrison, Ada N.,	Philadelphia,	
Morley, Christine Catharine,	Aldan.	
Morley, Elizabeth,	do.	
Morrow, Helen Harcourt,	Philadelphia,	5017 Ludlow St.
Muehler, Bertha J.,	do	2314 Poplar St.
Mumford, George Edgar,	do	6736 Woodland Ave.
Murtha, Harriet Dukes,	do	3323 N. 17th St.
Myers, Katherine S.,	Upper Darby.	
Nathan, Stella,	Philadelphia,	3217 Clifford St.
Neumann, Isabel B.,	do.	428 S. 42d St.
Oatman, Miriam Eulalie,	Mount Holly, N. J.	5810 Ashland Ave.
Paravicini, Lizette,	Philadelphia,	1640 Ellsworth St.
Patchel, Marguerite M.,	do.	[802 W. 3d St.]
Paul, Lillie C.,	Chester,	
Peacock, Mary Craig,	Torresdale.	
Pearce, Anne Tenney,	Philadelphia,	3923 Pine St.
Pennypacker, Marion Edith,	do.	3513 N. 18th St.
Peter, Mary,	do.	1221 W. Silver St.
Pinkerton, Gertrude Caskin,	do.	1732 Spruce St.
Platto, Cassandra Chandee,	Germantown,	[5313 Greene St.]
Price, Elizabeth T.,	Philadelphia,	2127 Sansom St.
Prince, Marion Richardson,	do.	2361 E. Susquehanna Ave.
Prizer, Margaret Mines,	do.	220 N. 13th St.
Read, Marianna,	Collingswood, N. J.	
Rendell, Elizabeth I.,	Philadelphia,	4904 Walton Ave.
Rennie, Florence E.,	Upper Darby.	
Rennie, Martha Violet,	Chester,	[2729 W. 3d St.]
Rhoads, Helen Elizabeth,	West Chester,	[406 W. Vernon St.]
Rice, Mary Culbert,	Germantown,	[647 W. Phil-Ellena St.]
Ries, Ray,	Philadelphia,	2615 N. 8th St.
Rockhill, Mabel Allen,	Wood Lynne, N. J.	
Rodman, Jessie Abigail,	Germantown,	[374 Shedaker St.]
Roggenburger, Blanche Thanhauer,	Philadelphia,	905 N. Franklin St.
Rohr, Alexona M.,	Moorestown, N. J.	
Rosenberg, Grace E.,	Philadelphia,	1747 N. 15th St.
Roseman, Lillian,	do.	1839 N. Van Pelt St.
Reibstein, Benjamin,	do.	503 S. 8th St.
Sagebeer, Maud Devereux,	Conshohocken.	
Samworth, Ellen,	Wilmington, Del.,	[1508 Lancaster Ave.]
Savage, Anna Edwards,	Manoa.	
Sawin, Nellie Louise,	Wilmington, Del.,	[1108 W. 8th St.]
Sawin, Nellie Margaret,	do.	[425 E. 6th St.]
Saybolt, Mary I.,	Philadelphia,	1419 N. 15th St.

Name.	Residence.	City Address.
Sayre, Louis Kain,	Philadelphia,	Central Manual Training High School.
Schaaf, Margaret Genevieve,	Glen Mills.	
Schlarbaum, Florence Melida,	Philadelphia,	2432 S. Rosewood St.
Schlehner, Harry W.,	Haddonfield, N. J.	1641 N. Cadwallader St
Schneider, Katharine C.,	Philadelphia,	[440 Queen Lane.]
Scott, Leon Wislar,	Germantown,	3143 N. Broad St.
Seelans, Irma Anna,	do.	1220 S. 2d St.
Selis, Morris Josselovitz,	do.	
Serrill, Kate Willis,	Darby.	240 N. Lawrence St.
Sheeran, Rita Anastasia,	Philadelphia,	240 N. Lawrence St.
Sheeran, Florence Frances,	do.	731 N. 26th St.
Sherburne, Ida L.,	do.	
Sherman, Alice Ethel Gordon,	Mt. Holly, N. J.	5822 Springfield Ave.
Shollenberger, Anita Price,	Philadelphia,	
Simmers, Edna,	Phoenixville.	700 Venango St.
Slifer, Levina,	Philadelphia,	1537 N. 6th St.
Sloan, Regina Marie,	do.	3312 N. 16th St.
Smaltz, Catharine Spangler,	do.	845 N. 19th St.
Smart, Katharine Ignatius,	do.	770 S. Broad St.
Smith, Beatrice P.,	do.	512 S. 47th St.
Smith, Mary Mabel,	do.	63d and Market Sts.
Snively, Margaret,	do.	[27 S. 35th St.]
Snyder, Martha Alice,	Camden, N. J.,	
South, Florence Tingley,	Berwyn.	2313 N. 7th St.
Sperling, Charles Nelson,	do.	
Spicer, Vernona Almeda,	Lansdowne.	[229 W. Hortter St.]
Squier, Edythe,	Germantown,	[E. Rex Ave.]
Staneruck, Bessie Evert,	Roxborough,	656 N. 33d St.
Stellwagon, J. Evaline,	Philadelphia,	656 N. 54th St.
Sterling, Mary Douglass,	do.	656 N. 54th St.
Sterling, Sara Hawks,	do.	
Stevens, Ernest J.,	Lynchburg, Va.,	Odd Fellows' Temple, Broad and Cherry Sts.
Stewart, Mary E. M.,	Philadelphia,	820 N. 26th St.
Stewart, Mary Weldon,	do.	1218 S. Broad St.
Stirling, Samuel R., M. D.,	do.	1931 E. Cumberland St.
Stirling, Sarah Hall,	do.	1931 E. Cumberland St.
Stoll, Charles Richard,	do.	2002 N. 31st St.
Stoltz, Katharine Earle,	Pitman, N. J.,	[19 1st Ave.]
Storrie, William Allen,	Salem, N. J.	
Stout, Alice E.,	Wilmington, Del.,	[815 Franklin St.]
Stout, Helen D.,	do.	[815 Franklin St.]
Stover, Bertha Lloyd,	Moorestown, N. J.	
Strang, Andrew Marshall,	Philadelphia,	1527 Christian St.
Strang, Emily Tudor,	do.	1527 Christian St.
Sutton, Margaret Perla,	Fox Chase.	
Sullivan Mary J.,	Lansdowne,	[15 Rigby Ave.]
Taber, Selma Louise,	Barnesville, Ohio,	Lansdowne.
Taylor, Martha Buzby,	Atlantic City, N. J.,	Cinnaminson, N. J.
Teal, Ida Antionette,	Philadelphia,	6203 Westminster Ave.

## THE COLLEGE.

Name.	Residence.	City Address.
Thatcher, Helen M.,	West Chester,	[134 W. Chestnut St.]
Thompson, Ella Reeves,	Camden, N. J.,	[408 Linden St.]
Thompson, Bertha Frances,	Philadelphia,	223 N. Wanamaker St.
Thorburn, Jean Harper,	Hammonton, N. J.	
Tietz, Elsie,	Philadelphia,	1442 N. 12th St.
Tomlinson, Bertha May,	Hatboro.	
Tonkin, Elizabeth Troth,	Glassboro, N. J.	1134 Main St., Darby.
Tull, Feronia Catharine,	Seaford, Del.,	801 N. 63d St.
Tullidge, Mary Louisa,	Philadelphia,	3742 N. 16th St.
Tuthill, Constance Cecilia,	do.	4216 Spruce St.
Tuttle, Ellulu C.,	do.	
Underwood, Alfred Irwin,	Moorestown, N. J.	2548 N. Douglas St.
Ungemach, Dena D.,	Philadelphia,	2548 N. Douglas St.
Ungemach, Pauline P.,	do.	1839 S. 16th St.
Venables, Esther Marie,	do.	415 S. 16th St.
Wallace, Lillian,	do.	427 S. Broad St.
Walton, Emily Jewell,	do.	1420 N. Bouvier St.
Walton, Mary Roberts,	do.	911 Dickinson St.
Weidler, Sara Agnes,	do.	[8 Lewis St.]
White, Clara E.,	Trenton, N. J.,	[Thorp's Lane.]
White, Jennie Keefer,	Germantown,	1126 S. 47th St.
Whitten, Horace,	Tunbridge Wells,	
Wilhelm, Leila Maude,	England,	
Wilkinson, Anna Agnes,	Marietta, Ohio,	
Wilkinson, Helen Elizabeth,	Philadelphia,	135 Springfield Ave.,
Wilkinson, Jessie R.,	do.	Chestnut Hill.
Williams, Florence,	Germantown,	3912 Girard Ave.
Williams, Julia Evna,	Chester.	3912 Girard Ave.
Williams, Margaret Jones,	Mt. Holly, N. J.	[431 W. Chelten Ave.]
Williams, Percy, B.,	Trenton, N. J.,	
Wilson, James Erskine,	Philadelphia,	
Wingard, Marie Edna,	do.	
Wire, Levi,	Spring City.	[23 Tyler St.]
Witham, Flora Harwood,	Beverly, N. J.	909 N. 50th St.
Wood, Cora,	Philadelphia,	910 S. 49th St.
Wood, Elizabeth A.,	Peters Creek,	
Worden, Marianna,	Philadelphia,	857 N. 50th St.
Worthington, Martha Keeler,	do.	[1016 Main St., Darby.]
Yancy, Roxana,	Forest Grove.	3210 Columbia Ave.
Yeager, Evelyn B.,	Riverton, N. J.	4208 Walnut St.
Young, Anna Marie,	Philadelphia,	
Young, Marianna Roxana	do.	
Yutte, Elizabeth M.,	do.	56 N. 36th St.
		2740 N. 15th St.
		1623 N. 15th St.
		3319 Sergeant St.

## SUMMER SCHOOL STUDENTS.

(SESSION OF 1908.)

Name.	Residence.	City Address.
Albert, Guy Elinore,	Yardley,	3714 Locust St.
Aloysia, Sister Mary,	Philadelphia,	262 S. 3d St.
Anderson, Harriet,	do.	427 S. Broad St.
Anita, Sister Mary Rose,	do.	1708 Summer St.
Arnold, Agnes F.,	Germantown,	[343 Church Lane.]
Arnold, Clement,	San Francisco, Cal.,	3611 Locust St.
Ash, William Cook,	Philadelphia,	828 Highland Ave.
Augustine, Sister St.,	do.	5330 Vine St.
Baker, Edward Hall,	do.	5444 Catharine St.
Bamford, William Taylor,	do.	1117 Shackamaxon St.
Barcus, J. Florence,	Greensboro, Md.,	[Ridley Park.]
Barnhurst, Mary V.,	Germantown,	[239 Winona Ave.]
Barsky, Victor,	Wilmington, Del.,	[409 King St.]
Bartine, Helen Woodward,	Philadelphia,	1300 Allegheny Ave.
Bassett, Charlotte,	do.	2121 N. 29th St.
Bauer, Dorothy,	do.	1514 Fairmount Ave.
Beardsley, Ethel,	Swarthmore.	
Beardwood, Matthew,	Roxborough.	
Beaumont, Laura,	Devon.	
Bechtel, Mary,	Colora, Md.,	3611 Locust St.
Bell, Emily Esther,	Haddonfield, N. J.	
Bergstraesser, Maria,	Philadelphia,	2100 S. College Ave.
Berman, Frances,	do,	1820 N. 21st St.
Bernard, Sister Mary St.,	do.	63d and Vine Sts.
Bigler, John Fremont,	Edinboro,	3733 Locust St.
Birch, Ethel Shepherd,	Philadelphia,	5229 Walnut St.
Birch, Lillie Watson,	do.	5229 Walnut St.
Birch, Thomas Bruce,	do.	5035 Summer St.
Bonnafton, Sydney Ashton,	do.	3439 Walnut St.
Bonstein, Ellen S.,	Pittston,	Darby.
Book, William Isaac,	Gettysburg,	117 S. 38th St.
Boon, Mary Craig,	Bridgeton, N. J.,	70 W. Johnson St. Gtn.
Borden, John Morrow,	Germantown,	[4622 Wayne Ave.]
Breidenbach, H. Leon,	Camden, N. J.,	[513 Market St.]
Brigham, Mary Fletcher,	Germantown,	[5513 Lena St.]
Brinkmann, Luise Dorothy,	Philadelphia,	1821 North St.
Brock, Henry Gibson,	do.	1612 Walnut St.
Brooke, Sallie Pleasants,	Sandy Spring, Md.,	113 S. 38th St.
Brookmyer, Ivan Lutz,	Neffsville,	3714 Locust St.
Brown, Charles Edwin,	Philadelphia,	937 Melon St.
Brown, William Philip,	Lancaster,	2222 S. 69th St.
Brungart, Edwin Monroe,	Selinsgrove,	5035 Summer St.
Buckminster, Irving Herbert,	Vineland, N. J.	4400 Chestnut St.
Burke, Lottie C.,	Memphis, Tenn.,	
Burnley, Mary Cloyd,	Swarthmore.	
Busech, Fred Louis,	Erie,	Dorm. 11 Bodine.

## THE COLLEGE.

Name.	Residence.	City Address.
Butcher, Theodora Starr,	Philadelphia,	206 S. 42d St.
Cahill, Elizabeth,	do.	2019 Arch St.
Caldwell, Mabel Jane,	Wilmington, Del.,	1229 Rodman St.
Cameron, Norman W.,	Elkton, Md.,	3704 Locust St.
Campbell, Frazelia,	Philadelphia,	1913 Bainbridge St.
Campbell, Willard Smith,	Norristown.	
Carey, Elise Packer,	Philadelphia,	3316 Arch St. -
Carr, Edwin Joseph,	do.	215 Ashmead St.
Carroll, Grace Bearen,	Downes, Md.,	4713 Baltimore Ave.
Caskey, William John,	Philadelphia,	3029 Rhawn St.
Castanza, Sister Mary,	do.	738 E. Westmorland St.
Caterson, Dorothy,	New York, N. Y.,	3443 Walnut St.
Chamberlin, Robert Roy,	Palmerton,	3424 Sansom St.
Chandler, William Webster,	Collegeville.	
Cheezum, Elizabeth,	Denton, Md.,	1211 N. Wilton St.
Cheyney, Mabel,	Cheyney.	
Child, Dorothy Martin,	Germantown,	[5023 McKean Ave.]
Christine, Frederick Foster, <sup>2d</sup> ,	Philadelphia,	3400 Walnut St.
Chrysostom, Sister Mary,	Falls of Schuylkill,	[St. Bridget's School.]
Clair, Clara Jessie,	Philadelphia,	6026 Irving St.
Clay, Amelia,	do.	2138 S. 15th St.
Cleaver, Horace Jones,	Ardmore,	[125 Argyle Rd.]
Coates, Sherman Gardner,	Berwyn.	
Collins, Anna Mary,	Philadelphia,	842 N. 40th St.
Collins, Verda Martyn,	Woodbourne,	3313 N. Smedley St.
Coates, Edward Osborne,	Philadelphia,	1635 Spruce St.
Columba, Sister Mary,	Falls of Schuylkill,	[St. Bridget's School.]
Comer, Paul Finch,	Philadelphia,	624 S. Washington Sq.
Comey, Arthur M. (Mrs.),	Chester.	
Conaway, Alice M.	Memphis, Tenn.,	4400 Chestnut
Conover, Elizabeth J.,	Atlantic City, N. J.,	Collingswood, N. J.
Conover, Ezanna,	do.	Collingswood, N. J.
Consili, Sister Mary	Philadelphia,	2012 Locust St.
Constance, Sister Mary,	do.	262 S. 3d St.
Cope, Helen Lang,	Gettysburg,	117 S. 38th St.
Cornell, Ella Crosby,	Wilmington, Del.,	[1717 Rodney St.]
Coulomb, Charles Augustine,	Philadelphia,	4249 Girard Ave.
Cowles, Henry Carleton, Jr.,	Darby,	[1102 Main St.]
Cox, Bertha Frances,	Philadelphia,	606 N. 34th St.
Cozens, Ernest Brazur,	Haddonfield, N. J.,	3537 Locust St.
Crozer, Edna Cornelius,	Morrisville.	
Dahmus, Edwin,	Columbus, O.,	636 N. 43d St.
Dale, Ralph Burnett,	Philadelphia,	1613 Corlies Ave.
Daly, Mary Rebecca,	Atlantic City, N. J.,	282 S. Frazier St.
Darlington, Jessie,	Media,	[36 E. Front St.]
Davis, Estella,	Baltimore, Md.,	Woodbury, N. J.
Davis, Jennie Morris,	Bethayres.	
Day, Howard,	Somerville, N. J.,	1029 S. 17th St.
Dean, Thomas Oscar,	Folcroft.	
Deffenbaugh, Walter Syl-	Connellsburg,	3413 Walnut St.
vanus,		

Name.	Residence.	City Address.
de Lemos, L. A. Vieira da Libra,	Brazil, S. A.,	101 S. 33d St.
Detter, David Fillmore,	Williamstown.	1033 Master St.
Di Biaso, Madeline,	Philadelphia,	5006 Willows Ave.
Dill, Clarence Green,	do.	[518 Leverington Av.]
Dill, Oliver Thornton,	Roxborough,	1948 E. Allegheny Av.
Dill, Ralph Judson,	Philadelphia,	3323 Walnut St.
Dinges, Ida May,	Middletown, Va.,	421 N. 41st St.
Dixon, Alice Campbell,	Atlanta, Ga.,	13 N. 36th St.
Dixon, James Thomas, Jr.,	Chestertown, Md.,	5616 Spruce St.
Dobbins, Thomas John,	Philadelphia,	2011 Walnut St.
Dove, Odin,	do.	3613 Locust St.
Dougherty, John, Jr.,	Logan, Ohio,	1028 S. 17th St.
Dover, Mary,	Wilmington, Del.,	
Douning, Addis Howard,	Moylan.	
Dreisbach, Matilda Viola,	Phillipsburg, N. J.	
Dudley, Charles Milton,	Fox Chase,	Cottman St.
Dukes, Myrtle M.,	Denton, Md.,	5133 Hazel Ave.
Eager, George Taylor,	Baltimore, Md.,	Dorm. 29 Morris.
Eaton, Katharine,	Philadelphia,	745 N. 41st St.
Ebert, Forley Astor,	Merchantville, N. J.	
Ebert, Rosa L.,	Philadelphia,	3629 N. 16th St.
Eckert, Agnes,	Germantown,	[5105 Greene St.]
Edelman, J. Joseph,	Philadelphia,	660 N. 8th St.
Ehrhart, John Phillip,	do.	3745 Spruce St.
Eisenberg, John Linwood,	Royersford.	
Eisenhart, Willis Wolf,	Abbottstown,	203 W. Mt. Pleasant Ave., Gtn.
Emrey, J. Thornton,	Philadelphia,	148 N. 21st St.
Emrey, Miles L.,	do.	1905 Mt. Vernon St.
Emsley, Elizabeth,	do.	114 Apsley St.
Esherick, George, Jr.,	do.	3926 Locust St.
Estella, Sister Marie,	do.	48th and Lancaster Av.
Euphrasia, Sister Mary,	do.	2343 E. Tucker St.
Evangeline, Sister Mary,	do.	2133 S. 11th St.
Evans, Abel Jones,	do.	5215 Chester Ave.
Everts, F. J.,	Lancaster,	[102 S. Ann St.]
Eves, Phoebe Mather,	Philadelphia,	3308 Baring St.
Ewing, Anna J.,	Mt. Airy,	[7027 Boyer St.]
Eynon, James Franklin,	Philadelphia,	811 E. Thompson St.
Eysenbach, George Gifford,	do.	611 N. 10th St.
Fleck, Wilbur H.,	do.	232 S. Cecil St.
Flint, Mary G.,	do.	5416 Catharine St.
Foulkrod, Emily,	Frankford,	[1534 Harrison St.]
Fountaine, Elizabeth Blanche,	Kennett Square.	
Fowler, Walter McKnight,	Philadelphia,	3533 Locust St.
Fox, Henry William,	do.	1641 N. Broad St.
Francis, Sister St.,	do.	48th and Lancaster Av.
Freas, Lillian, E.,	Plymouth Meeting.	
Freeman, M. Imogen,	Philadelphia,	1122 Ogden St.
Fritsch, Hermann Martin,	do.	2612 N. Fairhill St.

## THE COLLEGE

Name.	Residence.	City Address.
Furman, Catharine M. K.,	Trenton, N. J.,	[2612 N. Fairhill St.]
Galeano, Venancio Balbuena,	Asuncion, Paraguay,	3723 Spruce St.
Georgina, Sister Mary,	Germantown,	[209 E. Price St.]
Gertrude, Sister Mary,	Philadelphia,	Belgrade and Allegheny Ave.
Gibson, Emma B.,	Wilmington, Del.,	1513 S. Dorrance St.
Gifford, George Belvin,	Tuckerton, N. J.,	216 DeKalb Sq.
Gill, Isabella R.,	Philadelphia,	228 N. 19th St.
Gillen, Wilhelmina Loretta,	do.	1839 S. Cecil St.
Godfrey, Robert C.,	Millville, N. J.,	1723 Vine St.
Goldberg, Leo,	Philadelphia,	3223 Berks St.
Gonzaga, Sister Maria,	do.	48th and Lancaster Av.
Gorner, Albert Rowland,	Norristown,	[626 DeKalb St.]
Grantham, Herbert Albert,	Marshallton, Del.	431 S. 43d St.
Gray, Frederick James,	Philadelphia,	125 N. 19th St.
Grear, Harry Adler,	Sharon Hill,	741 N. 20th St.
Greenlee, Arden Dean,	Mansfield, O.,	4546 Baltimore Ave.
Greenwood, Bronté, Jr.,	Philadelphia,	[520 E. Broad St.]
Gregory, Martha Morrison,	do.	1849 Ritner St.
Griffin, Frank Hastings,	Chester,	3605 Market St.
Griffith, Frances E.,	Philadelphia,	3427 N. Marshall St.
Griffiths, Thomas W.,	Scranton,	[Yeadon.]
Groff, Wilmer Krause,	Jenkintown.	1513 Swain St.
Guest, Sarah A.,	Philadelphia,	3610 Spruce St.
Gyger, John Thomas,	Kimberton,	
Hadry, Charlotte Augusta,	Philadelphia,	
Haldeman, William S.,	Aldenville,	
Hall, Elizabeth Rankin,	Middletown, Del.	
Hall, Mamie M.,	Phoenixville.	
Hamilton, Ella J.,	Boothwyn.	
Hansgeur, Rose C.,	Philadelphia,	546 S. 49th St.
Hardesty, Ernest Jewell,	Seaford, Del.,	38 N. 36th St.
Hardie, Augustus Brunner,	Philadelphia,	52 N. 39th St.
Harner, Melvin C.,	Natrona,	1021 Arizona St.
Harpel, Sibyl,	Philadelphia,	4122 Chester Ave.
Harris, Robert Lewis,	Wilmington, Del.,	945 N. Warnock St..
Harris, Nelson Samuel,	Philadelphia,	1939 N. 33d St.
Harrison, Leonard Sale,	Sydney, Australia,	[Crozer Sem., Chester.]
Harvey, George Lewis, Jr.,	Secane,	317 S. Hicks St.
Hay, Reginald William,	Philadelphia,	252 S. 17th St.
Haynes, Charles D.,	Petersburg, Va.	
Hays, Mary Clendenin,	White Rock,	3305 Arch St.
Hegarty, Margaret Regina,	Philadelphia,	634 N. 36th St.
Helé, Herbert Eugene,	Germantown,	[4916 Main St.]
Heller, Archibald Carl,	Philadelphia,	6409 Saybrook Ave.
Helms, M. Ella,	Bridgeport, N. J.	
Henry, Sallie P.,	Everett,	921 Spruce St.
Heylmun, Willard Wellendorf,	Hollidaysburg,	3714 Locust St.
Hiatt, James Smith,	Philadelphia,	723 Witherspoon Bldg.
Higgins, Louise Alberta,	Higginsville, N. S.,	3714 Locust St.
Hillegass, Herbert Hannibal,	Pennsburg,	206 W. Susquehanna Av.

Name.	Residence.	City Address.
Ho, Lin,	Foochow, China,	3611 Locust St.
Hoagland, Horace Wilson,	Lambertville, N. J.	
Hof, Robert,	Horsheim, Germany,	3611 Locust St.
Hoffman, Leon,	Germantown,	[17 W. Walnut Lane.]
Hoopes, Edgar Malin, Jr.,	Wilmington, Del.	[1303 Rodney St.]
Hopkinson, Richard Dale,	Philadelphia,	3337 Walnut St.
Hoffner, W. Lane,	do.	4124 Cambridge St.
Horn, Blanche Campbell,	do.	1538 S. 58th St.
Horr, Tobias Cope,	Perkasie.	
How, Harold Waldron,	New York, N. Y.,	Dorm. 25 Bodine.
Hsii, Ching Fu,	Sungkiang, China,	3717 Spruce St.
Hu, Hung yiu,	Wusih, China,	3606 Locust St.
Hummel, Roger Austin,	Perkasie.	
Ida, Sister Mary,	Philadelphia,	2133 S. 11th St.
Imbs, Thomas Francis,	St. Louis, Mo.,	25 N. 35th St.
Irma, Sister Rose,	Philadelphia,	2133 S. 11th St.
Irmalita, Sister,	do.	2012 Locust St.
Irwin, Sara M.,	do.	1929 Bainbridge St.
Jackson, Edith May,	West Chester,	66 N. 34th St.
Jackson, Ellen Thomas,	Ashton, Md.,	113 S. 38th St.
Jackson, A. Davis,	Ogontz.	
Jackson, Halliday R.,	Mauch Chunk,	66 N. 34th St.
Jacobs, Ella,	Philadelphia,	4305 Spruce St.
Jaeger, Elizabeth,	Magnolia, N. J.	
James, Anna Phipps,	Glen Mills.	
Janvier, Mary May,	Philadelphia,	4430 Sansom St.
Jenkins, James Martin,	do.	826 N. Broad St.
Jenkins, Martha Campbell,	Camden, N. J.	[318 Cooper St.]
Johnson, Alberta Miller,	Downington,	3444 Chestnut St.
Johnson, Ralph Linwood,	Llanerch.	
Jones, Arthur Dittes,	Philadelphia,	2112 N. 16th St.
Jones, Catharine Balderston,	Westgrove,	114 W. Coulter St., Gtn.
Jones, Grey Maclean,	Philadelphia,	632 Land Title Bldg.
Jones, John Samuel William,	Chestertown, Md.	
Jones, J. Walter,	Ridley Park,	Dorm. 32 Bodine.
Jordan, Janet Gordon,	Philadelphia,	2428 Spruce St.
Joseph, Sister Clare,	do.	5330 Vine St.
Joseph, Sister Mary,	Chestnut Hill,	[Mt. St. Joseph.]
Joyce, Walter Mortland,	Palmyra, N. J.	
Kabakjian, Dicran Hadji,	Sivas, Armenia,	4712 Woodland Ave.
Kelly, John Patrick,	Philadelphia,	127 S. 24th St.
Keller, Mabel Hershey,	Germantown,	[5643 Underhill St.]
Kern, Richard Arminius,	Taborton, N. Y.,	3340 Chestnut St.
Ketter, Joseph Frank,	Philadelphia,	1543 N. 28th St.
King, Morland,	Schenectady, N. Y.,	Dorm. 31 Morris.
Kinsel, Ellen Elizabeth,	Altoona,	3709 Locust St.
Kister, Alfred B.,	Philadelphia,	2339 N. College Ave.
Knapp, Kenneth R.,	Gwynedd.	
Kostka, Sister Maria,	Philadelphia,	2343 E. Tucker St.
Kramer, William H.,	Lansdowne.	

## THE COLLEGE.

Name.	Residence.	City Address.
Kraus, Paul Tapper,	Abington.	Dorm. 25 Morris.
Kraus, William Henry,	Baltimore, Md.,	6243 Elmwood Ave.
Krieble, Vernon K.,	Lansdale.	1605 N. 9th St.
Krogh, D. M. Ferdinand,	Philadelphia,	1821 N. 31st St.
Krouse, Amelia L.,	do.	
Kuehner, Quincy Adams,	Allentown,	2122 Park Ave.
Landes, Amanda,	Lansdowne.	3131 Frankford Ave.
Kuntz, Franklin Samuel,	Philadelphia,	6715 Lansdowne Ave.
Kyle, Elmer Langham,	do.	4116 Reese St.
Lape, Marion,	do.	
Landis, Henry Garges,	do.	
Larkin, Anna Elizabeth,	Marcus Hook.	830 Highland Ave.
Larkin, Flavia,	Philadelphia,	[34 E. Logan St.]
La Salette, Sister,	Germantown,	
Latimer, Anna Austin,	Bristol.	
Lauretana, Sister Mary,	Germantown,	[209 E. Price St.]
Lea, Edgar P.,	Philadelphia,	3332 Walnut St.
Leonora, Sister,	do.	2343 Tucker St.
Levin, Isaac Harris,	do.	3263 Locust St.
Liang, Hing Luen,	Canton, China,	3603 Locust St.
Lin, Tsae Tsin,	Foochow, China	3606 Locust St.
Linch, Jessie Hulick,	Elmer, N. J.	
Linton, Anne,	Philadelphia,	434 S. 40th St.
Linton, Elizabeth,	do.	434 S. 40th St.
Lo, Po Yiu,	Canton, China,	3603 Locust St.
Lodge, James,	Lansdowne.	
Logo, Victor LeVan,	Philadelphia,	2833 Girard Ave.
Long, Agnes H.,	do.	828 Windsor Sq.
Long, Elizabeth Grey,	Lewes, Del.,	1800 Arch St.
Loux, Ida Viola,	Philadelphia,	5240 Catharine St.
Loux, Susanna Mary,	do.	5240 Catharine St.
Loveland, Clarence Clarke,	Corry,	3350 Walnut St.
MacCaulley, Elizabeth,	Wilmington, Del.	[811 West St.]
McCaffrey, John Carroll,	Philadelphia,	Dorm. 37 Morris.
McCall, Richard C.,	do.	1106 Spruce St.
McClintock, Anna L.,	Philadelphia,	3328 Woodland Ave.
McConnell, Franklin Perkins,	Darby,	[100 S. 4th St.]
McCorkle, Alvena,	Philadelphia,	1853 N. 22d St.
McCracken, George Lewis,	Media.	
McCullough, Milton Lewis,	Broomall.	
McFarlan, Roy,	West Chester.	
McGeorge, Royal,	Cynwyd.	
McKaign, F. Paul,	Philadelphia,	3334 N. 16th St.
McKinney, Joseph,	do.	2321 Oxford St.
McLees, Alice Edith,	Wayne.	
Ma, Yu Chi,	Shanshing, Chehki-	3609 Locust St.
	ang, China,	
Maier, Julia M.,	Royersford.	
Mancera, Ernesto,	Mexico City, Mex.,	3741 Spruce St.
Manzella, Joseph Anthony,	Vineland, N. J.	
Maria, Sister Regina,	Philadelphia,	2012 Locust St.

Name.	Residence.	City Address.
Marsh, Lucy Holden,	Belfast, N. Y.,	[Hammonton, N. J.]
Martin, Sarah P.,	Philadelphia,	1905 Mt. Vernon St.
Martin, Sergeant Price,	Chestnut Hill.	
Mary, Sister Margaret,	do.	[Mt. St. Joseph.]
Massé, Marie Clementine,	Philadelphia,	659 N. 52d St.
Masters, Fred Garman,	Rockwood,	3413 Walnut St.
Matheson, Donald Eric,	Reading.	Dorm. 32 Bodine.
Mattis, Clara Estelle,	Norristown,	[1007 Green St.]
Maxfield, Francis Norton,	Germantown,	164 Mayland St.
Mayer, George Lewis,	Philadelphia,	108 S. 21st St.
Mechling, William Huber,	Germantown,	[Wingohocking Heights.]
Menkin, Joshua Charles,	Philadelphia,	608 S. 9th St.
Merrell, William,	do.	2950 Frankford Ave.
Merriman, Marian S.,	do.	4015 Baring St.
Merritt, Adeline Kerr,	Easton, Md.,	4025 Baring St.
Metzenthin, Selma Marie,	Steelton.	
Miller, Harrison,	Germantown,	[53 E. Walnut Lane.]
Millward, William,	Crafton,	3475 Sansom St.
Mincemoyer, George Adam,	Renovo,	3611 Locust St.
Mitchell, George W.,	Marienville.	
Moore, Anna M.,	Richmond, Ind.,	[Westtown.]
Morison, Ada N.,	Philadelphia,	1943 Ridge Ave.
Morley, Elizabeth,	Aldan.	
Morton, DeForest Willard,	Philadelphia,	1933 Chestnut St.
Morton, Kenneth Hildeburn,	do.	1933 Chestnut St.
Motheral, Grace E.,	Germantown,	[444 Bringhurst St.]
Mueller, Frieda,	Philadelphia,	4434 Lancaster Ave.
Müller, Joseph Henry,	Swarthmore.	
Müller, John Hughes,	do.	
Musselman, David Paul,	Philadelphia,	5205 Archer St.
Myers, Katrina Laura,	Oberlin O.,	3435 Walnut St.
Nalle, Richard Tilghman,	Bryn Mawr.	
Neumann, Isabel Borrowes,	Philadelphia,	428 S. 42d St.
Ney, Frances Hume,	Buffalo, N. Y.,	3711 Walnut St.
Niblo, Caroline Elizabeth	Conshohocken,	[219 6th Ave.]
Louden,		
Noella, Sister Mary,	Germantown,	[34 E. Logan St.]
O'Donnell, Daniel Aloysius,	Andalusia.	
Ostro, John,	Wilmington, Del.	[6th and Pine Sts.]
Ott, George Warren,	Philadelphia,	831 N. Broad St.
Owers, Anna,	Germantown,	[5503 Germantown Av.]
Parris, Thomas G.,	do.	[2007 E. Chelten Ave.]
Patessima, Sister Mary,	Philadelphia,	Belgrade St. and Alle-
		gheny Ave.
Payrol, Silvio N.,	do.	3234 Chestnut St.
Paul, John Dawson,	do.	1007 Farragut Terrace.
Perring, Louise Franklin,	do.	4829 Haverford Ave.
Peter, Marv,	do.	1221 Silver St.
Phillips, Byron Armburster,	do.	915 N. 11th St.
Phillips, Gertrude Bishop,	Los Angeles, Cal.,	Oak Lane.
Pierce, Lilian Woodward,	West Chester.	

## THE COLLEGE.

Name.	Residence.	City Address.
Pierce, Mary Elizabeth,	Philadelphia,	3036 Frankford Ave.
Pike, Charles Edward Paul,	do.	7242 Woodland Ave.
Pillet, Jacob,	do.	248 Monroe St.
Pitts, Robert Mackey,	do.	1236 N. 41st St.
Pollitt, Annie May,	do.	1530 Bainbridge St.
Price, Harrie Bertsch, Jr.,	do.	3937 Chestnut St.
Proctor, Anna Mary,	West Chester,	[117 W. Biddle St.]
Pugliese, John,	Philadelphia,	1325 S. 15th St.
Pyle, Mary Wilson,	Wilmington, Del.,	2127 Mt. Vernon St.
Rawlings, Elizabeth M.,	Philadelphia,	1418 N. 13th St.
Rebert, Charles Muthart,	Pottstown,	Dorm. 42 Morris.
Reese, Ethel Cooper,	Cordova, Md.,	3444 Chestnut St.
Reichly, Otto Warren,	Penn's Creek,	3407 Walnut St.
Reilly, Ella Lucille,	Memphis, Tenn.,	4400 Chestnut St.
Reilly, Mary Alice,	do.	4400 Chestnut St.
Renninger, Warren Daub,	Philadelphia..	279 S. 57th St.
Rhoads, Lawrence D.,	Pottstown,	Dorm. 42 Morris.
Rhodes, William Warren,	Chester,	[601 W. 7th St.]
Rice, Mary Culbert,	Germantown,	[647 W. Phil-Ellena St.]
Risser, Abner Herr,	Elizabethtown,	3345 Woodland Ave.
Rissmiller, Isaac,	Penn's Grove, N. J.,	54 N. 36th St.
Roberta, Sister Mary,	Philadelphia,	23d and Lehigh Ave.
Robertson, Alfred George,	Darby.	[1104 Main St.]
Robertson, Christine F.,	do.	[1104 Main St.]
Robertson, John W.,	do.	
Robinson, Martha Bell,	Bridgewater.	
Rocap, Annie,	Millville, N. J.	[4120 Stiles St.]
Rodman, Jessie Abigail,	Germantown,	835 Catharine St.
Rosa, Americus George,	Philadelphia,	63d and Vine St.
Rosalia, Sister Mary,	do.	605 S. 3d St.
Rosenbaum, Samuel,	do.	
Rosenberry, Charles McCune,	Ridgeway,	
Roseman, Lillian,	Philadelphia,	1839 N. Van Pelt St.
Rosenberger, Noah B.,	Perkasie.	
Sabold, Irwin Moyer,	Paoli.	
Samuel, William Henry,	Philadelphia,	2505 N. 12th St.
Saulsbury, Susan Wilson,	Denton, Md.,	3444 Chestnut St.
Schaefer, John William,	Washington, D. C.,	122 S. 34th St.
Schell, Harry Anthony,	Philadelphia,	20th and Dauphin Sts.
Schiel, Louis M.,	Cincinnati, O.,	22 N. 36th St.
Schmidt, Caroline May,	Chester.	
Schmucker, Beale M.,	West Chester,	3316 Walnut St.
Schoch, Charles Leonard,	Ocean City, N. J.	
Schopbach, Charles H.,	Philadelphia,	Girard College.
Schraeter, Margaret,	Oxford, Md.,	3709 Locust St.
Schueder, Sister Margaretha,	Philadelphia,	2100 Girard Ave.
Seagrave, Daniel Ralph,	Reno, Nevada,	1236 N. 41st St.
Selis, Morris Josselovitz,	Philadelphia,	1220 S. 2d St.
Shafer, George Herbert,	Willsboro, N. Y.,	3733 Locust St.
Shryock, John Knight,	Philadelphia,	1414 N. Bouvier St.
Simmers, Edna,	Phœnixville.	

Name.	Residence.	City Address.
Simonson, Louis Waite,	Baltimore, Md.,	Dorm. 43 Bodine.
Skilien, Mary Mildred,	Philadelphia,	321 S. Frazier St.
Smart, Katherine Ignatuis,	do.	843 N. 19th St.
Smith, Edward Tiel,	Magnolia, N. J.	2014 Pine St.
Smith, C. Shillard,	Philadelphia,	3714 Locust St.
Smith, Roy Clark,	Denton, Md.,	
Smith, William Moffett,	Mullica Hill, N. J.	
Solt, Rae Livingston,	Philadelphia,	3816 Girard Ave.
Spickler, Minnie Louise,	do.	1235 N. 53d St.
Staneruck, Bessie Evert,	Roxborough,	[E. Rex Ave.]
St. Elizabeth, Sister,	Philadelphia,	1212 Locust St.
Sterling, Eunice Blanche,	Baltimore, Md.,	3611 Locust St.
Sterling, Sara Hanks,	Philadelphia,	656 N. 54th St.
Stewart, Mary Weldon,	do.	1218 S. Broad St.
St. Gertrude, Sister,	do.	23d and Lehigh Ave.
St. Monica, Sister,	do.	1212 Locust St.
St. Thomas, Sister Mary,	do.	48th and Lancaster Av.
Stiteler, Chester Arthur,	Uwchland.	
Storey, Charles Joseph,	Philadelphia,	4919 Fairmount Ave.
Stradling, Eloise,	Beverly, N. J.	
Strahan, Charles Johnson,	Oakhurst, N. J.,	54 N. 36th St.
Strempfier, Sister Lydia,	Philadelphia,	2100 S. College Ave.
Sullivan, Margaret K.,	Camden, N. J.,	[517 Mickle St.]
Swift, Violet Leola,	Philipsburg,	2535 N. Bancroft St.
Sylvester, Guy C.,	Philadelphia,	1821 Wallace St.
Sylvester, Mary Fisher,	Hillsboro, Md.,	3709 Locust St.
Tamme, Charles,	Philadelphia,	3623 Market St.
Tang, Hsuan,	Canton, China,	3704 Locust St.
Taylor, Archer,	Swarthmore.	
Teas, Elizabeth M.,	Brooklyn, N. Y.,	3921 Pine St.
Thomson, Harold Arthur,	Phoenixville,	133 N. Dearborn St.
Thomson, Cora Beggs,	Narberth.	
Thompson, Alicia B.,	England,	3230 Woodland Ave.
Thompson, Bertha Pierce,	Philadelphia,	3250 W. Huntingdon St.
Thompson, Ella Reeves,	do.	223 N. Wanamaker St.
Tobias, Channing Heggie,	Augusta, Ga.,	3931 Nice St.
Tomlinson, Bertha May,	Hatboro.	
Tsang, Lui-ngaau,	Shanghai, China,	212 S. 37th St.
Tustin, Helen,	Philadelphia,	1813 N. 22d St.
Underwood, Alfred Irwin,	Morestown, N. J.,	3714 Locust St.
Underwood, Ida Jane,	Grampian,	Ogontz.
Vail, Ernest Macdowell,	Philadelphia,	3345 Woodland Ave.
Van Buskirk, Emma May,	do.	1822 E. Clementine St.
Van Haagen, Meta R.,	do.	749 N. 40th St.
Van Horn, Alfred Roland,	do.	5103 Chester Ave.
Van Horn, Horace Miller,	do.	5013 Chester Ave.
Venables, Esther Marie,	do.	1839 S. 16th St.
Wade, Margaret,	Washington, D. C.,	3350 Walnut St.
Wagner, Alvin E.,	Nesquehoning,	5125 Parrish St.
Wagner, Thomas Jefferson,	Shamokin,	3434 Sansom St.
Walker, Ralph Ward,	Butler,	Dorm. 34 Bodine.

## THE COLLEGE.

Name.	Residence.	City Address.
Walling, Ritney Kelsey,	Germantown,	[240 W. Rittenhouse St.]
Walter, Cornelius J.,	Philadelphia,	6610 Woodland Ave.
Walton, Anna,	Moylan.	
Walton, Mary Roberts,	Philadelphia,	1420 N. Bouvier St.
Watson, May,	Trenton, N. J.,	[330 S. Warren St.]
Weaver, Jennie M.,	Wilmington, Del.	
Weber, Harry Richard,	Bay City, Mich.,	200 N. 16th St.
Weeks, Florence Louise,	New York, N. Y.,	3800 Locust St.
Wendel, Harry Forrest,	Wauwatosa, Wis.,	Dorm. 22 Morris.
Wertman, Mervin Jonas,	Orefield.	
Westcott, Martha Woodward,	Woodbury, N. J.	
White, Jennie K.,	Germantown.	3709 Locust St.
Whiteford, Roger Jay,	Rockville, Md.,	2253 N. 53d St.
Whiteley, Ethel Christine,	Philadelphia,	5136 Larchwood Ave.
Wickersham, Jane Hannah,	Unionville,	1221 N. 8th St.
Wiegmann, J. Edwin R.,	Philadelphia,	3835 Fairmount Ave.
Wicker, Carolyn Gibbons,	Bird-in-Hand,	Dorm. 11 Morris.
Willard, Donald Campbell,	New Bloomfield,	3337 Locust St.
Williams, D. Evans, Jr.,	Bala,	6061 Greenway Ave.
Wilson, Addie Lavinia,	Denton, Md.,	
Wilson, Nellie G.,	Phoenixville.	5431 Spruce St.
Wirner, Clementine,	Lancaster,	857 N. 50th St.
Witham, Flora Harwood,	Philadelphia,	410 S. 15th St.
Wood, Edward Fitz Randolph,	do.	
Woods, Walter Samuel,	Germantown,	[37 High St.]
Woolson, Frank S.,	Fishing Creek, N. J.	
Wright, Albert Frank,	Philadelphia,	1239 N. 54th St.
Wright, Charles Milton,	Aberdeen, Md.,	3709 Locust St.
Wright, William Elbert,	Middletown, Del.,	3250 Sansom St.
Xaveria, Sister Mary,	Philadelphia,	1708 Summer St.
Yao, Chung Lin,	Tientsin, China,	3611 Locust St.
Yocom, Albert Duncan, Jr.,	Chester,	[202 E. 8th St.]
Young, Anna Marie,	Philadelphia,	2740 N. 15th St.
Young, Mariamna Roxana Seward,	do.	1623 N. 15th St.
Zinsser, Harry Frederick,	Pittsburg,	3709 Locust St.

## EVENING SCHOOL OF ACCOUNTS AND FINANCE.

## THIRD YEAR STUDENTS.

Name.	Residence.	City Address.
Aldred, Ernest Marlatt,	Philadelphia,	1344 Moore St.
Asher, William James,	Folsom.	
Blair, William James,	Philadelphia,	2448 N. 20th St.
Corbett, Harry Morton,	do.	2019 Rittenhouse St.
Craig, David,	do.	3064 E. Thompson St.
Craig, William Atkinson,	do.	1709 N. 42d St.
Cunningham, Frederick Edgar,	do.	555 N. 58th St.
Dawson, Howard Milton,	Norwood,	1443 S. 53d St.
Duffy, Matthew Block,	Philadelphia,	[12 Cleveland Ave.]
Ferry, Joseph Davis,	Garrettford.	1623 Race St.
Gretz, Harry Clark,	Philadelphia,	
Hill, Albert,	do.	1822 Wallace St.
Hopkins, Irvin Gaylord,	do.	1581 Indiana Ave.
Kollock, Harry,	do.	1631 Mt. Vernon St.
Kyle, Charles Harlan,	do.	2107 S. 58th St.
Lacy, John Vincent,	do.	2516 N. 19th St.
Leonard, Richard Dunlop,	do.	4255 Leidy Ave.
McGrath, Edward Joseph,	do.	3744 N. 15th St.
McIlhone, Donald Stewart,	do.	1753 Frankford Ave.
Murfit, Wallace Gilkyson,	do.	416 S. 15th St.
Rodd, Robert Thomas,	Mt. Airy,	[107 E. Mt. Airy Ave.]
Seltzer, William John,	Philadelphia,	1814 N. 24th St.
Storm, Charles Theodore Henry	do.	1217 S. 49th St.
Sykes, George,	do.	2032 N. 18th St.
Timm, William Howard,	do.	1739 Diamond St.
Wells, Charles C.,	do.	5320 Market St.
Whitmore, Sidney,	do.	1442 N. 29th St
Wilson, William Jeffries,	do.	Dorm. 425 McKean.

## SECOND YEAR STUDENTS.

Anderson, William Downs,	Philadelphia,	4948 Hazel Ave.
Bagans, Arthur Lawrence,	do.	4507 N. 20th St.
Bardsley, Walter Scott,	do.	5066 Reno St.
Baylis, Jesse Kendall, ad,	Wilmington, Del.,	[808 W. 11th St.]
Bendig, Frederick Henry, Jr.,	Philadelphia,	1210 S. 46th St.
Blakely, Dillwyn Parrish,	do.	2514 Poplar St.
Burgin, Eugene Arthur,	Frankford,	[1635 Allengrove St.]
Burkhardt, Walter Miller,	Philadelphia,	220 Buckingham Place,
Callinan, Charles Biles,	do.	4151 N. Broad St.
Callingham, Howard,	Audubon, N. J.	
Carpenter, John Murdock,	Wilmington, Del.,	[903 Van Buren St.]
Casey, George Washington,	Frankford,	[1814 Harrison St.]
Chambers, John Joseph,	Philadelphia,	1528 Snyder Ave.

## THE COLLEGE.

Name.	Residence.	City Address.
Chain, Charles Hershell Aloy- sius,	Philadelphia,	609 N. 48th St.
Clevenger, J. Harvey,	Wissahickon,	[3879 Manayunk Ave.]
Colhoun, James,	Philadelphia,	4428 Sansom St.
Colver, Harry James,	do.	2230 Lambert St.
Condon, Harry Ruth,	do.	540 N. 58th St.
Cortelyou, Charles Campbell,	do.	3906 Baltimore Ave.
Crooks, James,	do.	1626 N. 26th St.
Dallas, William Halpin,	do.	1813 N. Park Ave.
Davinson, G. Alexander,	Germantown,	[419 Locust Ave.]
Dehler, Horace John,	Philadelphia,	2436 Oxford St.
Desmond, Michael Aloysius	Devon,	
Dougherty, Lawrence Ruhl,	Philadelphia,	803 S. 49th St.
Douglass, William A.,	do.	4516 N. 17th St.
Dulton, Walter G.,	do.	6713 Woodland Ave.
Eisenlohr, Walter H.,	do.	432 W. Huntingdon St.
Ellis, Walter, Jr.,	do.	2458 N. 17th St.
Fontyn, Frederick Anthony,	do.	3418 N. 11th St.
Garrett, Le Roy Dampman,	do.	334 N. 31st St.
Gillespie, James Callinan,	do.	2009 N. 31st St.
Gorke, John H.,	do.	6053 Greenway Ave.
Grant, James S.,	Wilmington, Del.,	[129 N. Monroe St.]
Gray, William Southwick,	Philadelphia,	938 S. St. Bernard St.
Hass, Harry John,	do.	3825 Baring St.
Haggarty, Daniel,	do.	1318 Pine St.
Haines, Jesse William,	do.	3827 Cambridge St.
Haubert, Earl Philip,	do.	1914 W. Dauphin St
Hauch, John Paul,	do.	2129 N. Uber St.
Heim, Gilbert Hastings,	Doylesford.	Berwyn.
Hindle, Henry L., Jr.,	Philadelphia,	2532 Swain St.
Hires, William G.,	do.	2342 S. 20th St.
Hoffman, Frank Louis,	do.	3057 N. 16th St.
Hofman, Adolphe John,	do.	2136 S. 15th St.
Keast, George Roscoe,	do.	2654 N. 31st St.
Kulp, Vincent Berge,	Telford.	
Lackey, Henry Evans,	Wilmington, Del.,	[909 Monroe St.]
Lipp, Samuel Rice,	Philadelphia,	408 N. 31st St.
MacDonnell, James Wesley,	do.	2559 Memphis St.
Molony, Edward Stanislaus,	do.	1007 Wolf St.
Marion, Joseph F.,	do.	2916 Girard Ave.
Maxwell, J. Howard,	do.	3239 Sydenham St.
Neff, Oscar Eugene,	do.	24 N. 61st St.
Patterson, Joseph,	do.	5214 Larchwood Ave.
Paul, John,	do.	2429 Kimball St.
Pearce, Frank Olin,	do.	529 N. 56th St.
Phillips, David,	do.	727 Fitzwater St.
Pomeroy, George Robert,	do.	215 S. 41st St.
Pritchard, Arthur Clifford,	do.	5224 Westminster Ave.
Radford, Alphonse Henry,	do.	1245 N. 60th St.
Reynolds, George Lee,	do.	226 Gaskill St.
Rich, Aden Partridge,	do.	412 N. 32d St.

Name.	Residence.	City Address.
Riley, Howard Alfred,	Philadelphia,	421 S. 15th St.
Schaefer, William Charles, Jr.	Germantown,	[207 Cliveden Ave.]
Small, Benjamin Lester,	Philadelphia,	2432 Kimball St.
Soast, William John,	do.	732 W. Lehigh Ave.
Sorzano, Lucas,	do.	1102 Pine St.
Stehl, Shendon V.,	do.	3019 N. Fairhill St.
Stenger, Aubrey R.,	do.	1236 W. Huntingdon St.
Stevenson, Milton Webster,	do.	5408 Haverford Ave.
Swartz, Charles Leo,	do.	3551 Warnock St.
Scott, Taylor Harold,	do.	3613 Locust St.
Tozer, Arthur Samuel,	do.	5040 Osage St.
Walsh, Thomas Frank,	West Chester,	[232 E. Gay St.]
Wat, Alexander Henry,	Philadelphia,	120 S. 4th St.
Way, Pennock Marshall,	do.	500 N. 39th St.
Williamson, James Anthony,	do.	123 W. Logan St.
Wood, Bert H.,	do.	3407 Walnut St.
Wood, John Henry,	Torresdale.	
Zimmerman, Robert Weidman,	Philadelphia,	1721 Mt. Vernon St.

## FIRST YEAR STUDENTS.

Allaun, William Edwin,	Philadelphia	2547 S. Broad St.
Baker, William Harry,	do.	3137 N. 13th St.
Baker, Harry Taylor,	Wilmington, Del.,	[706 West St.]
Barcus, Harrison M.,	Philadelphia,	2347 N. 13th St.
Bentz, Edgar Huntzberger,	do.	1811 N. 24th St.
Beurath, Frank Henry,	do.	4514 N. 19th St.
Bottomley, Harry C.,	Chester,	[617 Madison St.]
Bowker, Frank Evans,	Camden, N. J.,	[3111 Westfield Ave.]
Brady, Thomas,	Philadelphia,	708 E. Clearfield St.
Brown, Harry Emmett,	do.	2817 Bridge St.
Brown, Samuel Walter,	do.	1611 Oxford St.
Brumfield, Lawrence Gibson,	do.	6149 Upland St.
Brumfield, Paul Gay,	do.	1317 Porter St.
Bryan, Edward J.,	do.	1704 Arch St.
Bryant, George Clarence,	do.	234 S. 3d St.
Burghart, Thomas Vincent,	do.	3112 Wharton St.
Burnett, Warren A.,	do.	3808 Cambridge St.
Burt, Herman P.,	do.	5713 Malcolm St.
Callingham, Byron Hilton,	Germantown,	[27 W. Rockland St.]
Casey, Oliver Goldsmith,	Philadelphia,	2468 N. Palethorpe St.
Clark, Edward R.,	do.	1804 Race St.
Clegg, Edward Samuel,	do.	2940 N. 8th St.
Cooper, Israel Harry,	do.	96th and Tinicum Ave.
Corliss, William Mills,	do.	3442 Chestnut St.
Cotton, William Gourley,	do.	1532 W. Cumberland St.
Covert, Earl Ritchey,	do.	221 S. 36th St.
Cowdrick, Walter,	do.	429 Richmond St.
Cox, Irving England,	do.	23 S. Yewdell St.
Craig, Harry Raymond,	Wilmington, Del.,	[1216 W. 4th St.]
Davison, William R.,	Philadelphia,	715 Pine St.

## THE COLLEGE.

Name.	Residence.	City Address.
Decker, Floyd Eugene,	Philadelphia,	5905 Thompson St.
DeHart, Jerome Leon,	do.	1429 W. Somerset St.
Donohue, Thomas H.,	Ardmore,	[Box 217.]
Ebaugh, Archie Gilbert,	Philadelphia,	806 N. 16th St.
Erdel, Alfred Thomas,	do.	3608 Walnut St.
Feeney, Henry Jac,	Wilmington, Del.,	[1313 Dupont St.]
Field, Roy Janney,	do.	[903 Gilpin Ave.]
Fincken, Harold Brockbank,	Philadelphia,	5027 Florence Ave.
Frey, Robert Uhler,	do.	2342 St. Alban's Place.
Fryburg, Claude Howard,	do.	6727 Woodland Ave.
Fulforth, Raymond M.,	do.	1803 N. Camac St.
Furia, Vincent,	do.	820 Catharine St.
Gardner, William Lansing,	Camden, N. J.,	[424 Stevens St.]
Gehman, Clarence R.,	Philadelphia,	413 Preston St.
Geyer, J. Herbert,	do.	1702 Mifflin St.
Gibbons, Edward George,	do.	1512 N. Broad St.
Gibbs, Charles Clarence,	Chester,	[318 Kerlin St.]
Glover, E. Raymond,	Camden, N. J.,	[876 Haddon Ave.]
Godfrey, Arthur Young,	Ardmore.	
Guckes, William Philip,	Philadelphia,	2334 Tioga St.
Gunderman, Edward,	Germantown,	[7013 Greene St.]
Hager, Milton S.,	Philadelphia,	3021 Susquehanna Ave.
Hall, Roland Cleveland,	Wilmington, Del.,	[30th and Spruce Sts.]
Hanley, William Joseph,	do.	[1100 French St.]
Hannan, Donald J.,	Philadelphia,	2047 N. 15th St.
Hansell, Charles Johnson,	Academy.	
Harper, John Wakefield,	Philadelphia,	2242 N. Woodstock St.
Hartman, Leroy Edward,	Wilmington, Del.,	[406 Poplar St.]
Hasson, Philip J.,	Philadelphia,	3910 Aspen St.
Hay, Randall Groves,	do.	3272 Chancellor St.
Hebrank, Harry M.,	do.	748 N. 41st St.
Hendricks, Alfred Verkes,	Conshohocken,	[814 Fayette St.]
Hofstetter, August Emil	Rutledge.	
John,		
Hofstetter, Julius Mann,	Philadelphia,	3235 Powelton Ave.
Hughes, Harry M.,	Germantown,	[40 W. Johnson St.]
Humphrey, Julius Warden,	Wilmington, Del.,	826 W. 9th St.
Huntington, Maxwell,	Philadelphia,	5918 Master St.
Inonye, Tokishige,	Yokohama, Japan,	Naval Home.
Janney, Richard,	Roxborough,	[5901 Ridge Ave.]
Jesse, Charles P.,	Philadelphia,	904 Pine St.
Johnston, Matthew MacElree,	do.	3732 N. 15th St.
Johnston, Samuel,	do.	2232 Catharine St.
Jones, Charles Edward,	do.	218 N. Wilton St.
Jones, Edward Reynolds,	do.	6031 Elmwood Ave.
Kelly, Arthur Crozier Mit-	do.	3815 Hamilton St.
chell,		
Keown, Robert White,	do.	1413 Dickinson St.
Kleishorst, John E.,	do.	3512 N. 6th St.
Klinedinst, Hiram Augustus,	do.	6015 De Lancey St.
Kneibler, Arthur Reed,	do.	5339 Chancellor St.

Name.	Residence.	City Address.
Leech, William S.,	Philadelphia,	4814 Warrington Ave.
Lees, Warren Harper,	do.	1825 N. 8th St.
Lewis, Howard S.,	do.	5331 Thompson St.
Ligtermoest, Harry,	do.	3427 Walnut St.
Lindenmayer, Charles Frederick,	do.	1935 Westmoreland St.
Lippincott, Wallace,	do.	3628 N. 19th St.
Lockwood, Charles Alexander	do.	The Gladstone.
Lurker, Harry,	do.	325 S. 7th St.
McAllister, Leslie Arymar,	do.	136 N. 18th St.
McCleary, Samuel,	Germantown,	[156 W. Price St.]
McCloskey, Leonard Thomas, Wilmington, Del.,		[312 N. Jackson St.]
McConnell, Arthur Jarvis,	Cynwyd.	
McSweeney, Charles Francis, Philadelphia,		2132 S. Broad St.
Magann, Charles V.,	do.	3910 Wallace St.
Marchant, Benjamin Thomas,	do.	2307 N. Bouvier St.
Martin, Raymond,	do.	3925 Brown St.
Mayer, Richard,	do.	619 N. 6th St.
Miller, Thomas McCracken,	do.	2502 N. Broad St.
Montgomery, Samuel Douglas,	do.	2002 Bainbridge St.
Neal, Swain Lee,	Wilmington, Del.,	[808 W. 9th St.]
Nickel, Charles August,	Philadelphia,	337 New Market St.
O'Donnell, William C.,	do.	2323 N. 17th St.
Ornston, Leo Nicholas,	do.	1324 S. Wilton St.
Pabst, George Henry, Jr.,	do.	2919 N. 6th St.
Parkinson, Joseph Laurence,	Torresdale.	
Pemberton, John Jr.,	Philadelphia,	5225 Thompson St.
Persichetti, Vincent Roger,	do.	6328 Vine St.
Petty, Walter Kershner,	Germantown,	[5356 Chew St.]
Peyton, Edward Smith,	Philadelphia,	2247 N. 22d St.
Pierce, Lawrence Hare,	do.	3440 N. 15th St.
Rank, Levin,	do.	3556 N. 11th St.
Rau, Benjamin,	do.	1406 Marston St.
Raue, William Carl,	do.	121 N. 10th St.
Remont, Louis Maurice,	Moylan.	
Riddle, John France,	West Chester,	[541 S. Matlack St.]
Riggan, Archie T.,	Philadelphia,	1928 Green St.
Roberston, Malcolm Humphrey,	Ridley Park.	
Robinson, Albert,	Philadelphia,	1319 S. 32d St.
Rupert, William C.,	do.	5214 Irving St.
Savacool, James Irvin,	do.	Geo. V. Cresson Co., 17th and Allegheny Ave.
Schönholz, Moses,	do.	5228 S. American St.
Schussler, Christian Robert,	do.	2114 S. Buckingdam Pl.
Schussler, Edward Henry,	do.	2114 S. Buckingham Pl.
Silverman, Abe,	do.	335 S. 5th St.
Slack, Walter Samuel,	Millville, N. J.	
Souder, George Andrew,	Wilmington, Del.,	[1621 Lancaster Ave.]
Sterrett, William Granlees,	Philadelphia,	2446 Carpenter St.

Name.	Residence.	City Address.
Stewart, Edward Crowther,	Chester,	[1511 Walnut St.]
Sullivan, Frank Joseph,	Lansdowne,	[15 Rigby Ave.]
Taylor, Thornton Charles,	Philadelphia,	4315 Manayunk Ave.
Thress, Charles A.,	do.	5126 Race St.
Tomb, John M.,	do.	806 N. 16th St.
Tomb, Webster W.,	do.	806 N. 16th St.
Town, Charles MacLellan, 2d,	do.	2118 Vine St.
Turner, John Augustin,	do.	523 Green St.
Unruh, Howard Wentz,	Fox Chase.	929 Edgewood Ave.
Volk, Walter Francis,	Philadelphia,	3629 N. 15th St.
Walter, Harry Charles,	do.	930 S. 49th St.
Weed, Carl Banks,	do.	800 N. Cameron St.
Welcker, William Henry,	do.	810 Arch St.
Weston, Alfred Edward,	do.	2830 N. Marshall St.
Wilkinson, Robert Love,	do.	1932 Christian St.
Williams, Charles Elijah,	do.	46 N. 36th St.
Williams, Charles,	do.	[707 Penn St.]
Wright, William Shafer,	Camden, N. J.,	

**Note.—**Duplications represent: 4 students also registered in the Medical Department, 2 in Law, 6 in the Graduate School; 54 Summer School students also registered in Teachers' Courses, 37 in various College courses, 20 in the Graduate School, 7 in Medicina, 10 students in the Teachers' Courses are registered in the Graduate School. Total, 190.

## GRADUATE SCHOOL.

## FELLOWS AND SCHOLARS, 1908-09.

## ON THE GEORGE LEIB HARRISON FOUNDATION.

## FELLOWSHIPS FOR RESEARCH.

*In Anthropology:*

Name.	Residence.	City Address.
Edward Sapir,	Brooklyn, N. Y.,	3265 Woodland Ave.
A. B., A. M., Ph. D. (Columbia College, 1904; Columbia University, 1905, 1908). University Scholar in Linguistics, Columbia University, 1905-1906, University Fellow in Linguistics and Anthropology. Research Assistant in Anthropology, University of California, 1907-1908.		

*In Classics:*

George Depue Hadzsits,	Detroit, Mich.,	3423 Walnut St.
A. B., A. M., Ph. D. (Michigan, 1895, 1896, 1902). Teacher in Detroit Central High School, 1896-1898. Assistant in Latin, Michigan, 1898-1899. Student, American School in Rome, 1900-1901; Acting Assistant Professor of Latin and Greek, Cincinnati, 1903-1905; Wisconsin, 1905-1906. Harrison Fellow for Research in Latin, 1906-1908.		

Clark Diven Lambertson,	Carlisle,	4005 Chestnut St.
A. B., A. M., Ph. D. (Dickinson, 1902; Princeton, 1905, 1908). Student, Princeton Theological Seminary, 1903-1906. Fellow in Christian Archaeology in the American School of Classical Studies, Rome, Italy, 1906-1908.		

*In Germanics:*

Amandus Johnson,	Chisago City, Minn.,	3929 Baltimore Ave.
A. B., A. M., Ph. D. (Gustavus Adolphus College, 1904; Colorado, 1905; Penn- sylvania, 1908). Assistant in German, Colorado University, 1904-1905. Harrison Fellow in Germanics, 1906-1908.		

*In History:*

Hubert Hilary Suffren Aimes, West Haven, Conn.,	4063 Sansom St.
Ph. B., Ph. D. (Yale, 1897, 1905). Professor of History and Political Science, Ursinus College, 1905-1906. Tutor in History, College of the City of New York, 1906-1907. Harrison Fellow for Research in History, 1907-1908.	

## FELLOWSHIPS.

*In Chemistry:*

William Henry Chapin,	Amherst, Ohio,	3726 Sansom St.
A. B. (Oberlin, 1904). Assistant in Chemistry, Oberlin College, 1904-1906. Instructor in Chemistry, Oberlin, 1906-1907. Harrison Scholar in Chemistry, 1907-1908. Chemistry; second year.		

Ben Leon Glascock,	Austin, Texas,	207 S. 37th St.
B. S., M. S. (University of Texas, 1904, 1907). Tutor in Chemistry, University of Texas, 1905-1907. Harrison Fellow in Chemistry, 1907-1908. Chemistry; second year.		

*In Classics:*

Name.	Residence.	City Address.
Wesley Lynn Hemphill,	Riverton, N. J.	
A. B., A. M. (Pennsylvania, 1904, 1905). Student, Princeton Theological Seminary, 1905-1908. Greek, Latin, Arabic; second year.		Harrison Scholar in Classics, 1904-1905.

Robert MacDonald Kirkland, Harpursville, N. Y., Dorm. 441 Hopkinson.  
A. B., A. M. (Chicago, 1899; Pennsylvania, 1908). Harrison Scholar in Classical Languages, 1907-1908. Latin, Greek, Classical Philology; third year.

*In Economics:*

Edmund Rutan Lupton,	Mattituck, N. Y.,	1639 N. 55th St.
A. B. (Yale, 1906). University Scholar in Economics, Columbia, 1907-1908. Economics; first year.		

*In English:*

George Comly Foust,	North Wales.	
A. B., A. M. (Pennsylvania, 1906, 1908). Assistant in English, University of Pennsylvania, 1906-1908. English, Latin; third year.		
Charles Jacob Sembower,	Bloomington, Ind.,	206 De Kalb Sq.

A. B. (Indiana, 1892). Student, Cornell University, 1895-1897. Instructor in English, Indiana University, 1892-1895; Assistant in English, Cornell University, 1895-1897; Assistant Professor in English, Indiana University, 1897-1904; Associate Professor, ibid, 1904-1907. Harrison Fellow in English, 1904-1908. English Literature, English Philology; second year.

*In Germanics:*

Robert Rutherford Drummond,	Bangor, Me.,	202 S. 37th St.
B. S. (Maine, 1905). University Scholar in Germanics, 1905-1907; Harrison Fellow, 1907-1908. Germanics, English; fourth year.		

*In History:*

Herbert Clifford Bell,	Hamilton, Ontario, Canada,	Dorm. 219 McKean.
A. B. (Toronto, 1902). University Scholar in European History, 1903-1904. Alexander McKenzie Fellow of the University of Toronto, 1904-1905. Absent on leave, 1905-1906. Spring Semester, University of Paris, 1906. Harrison Fellow in History, 1906-1907. Absent on leave, 1907-1908. European History, American History, Political Science; third year.		

Ivory Victor Iles	Lyons, Ind.,	Dorm. 310 Brooks.
A. B., A. M. (Kansas, 1904, 1905). Fellow in European History, Kansas, 1904-1905. Assistant in History and graduate student, Colorado, 1905-1906; ibid, Wisconsin, 1906-1907. Instructor in History, Politics, and Economics, Princeton, 1907-1908. American History, European History; first year.		

Earnest VanCourt Vaughn,	Columbia, Mo.,	251 S. 41st St.
B. L., A. M. (Missouri, 1900, 1904). Assistant in History, University of Missouri 1905-1907; Instructor, 1907 to date. English History, European History, English Literature; first year.		

*In Mathematics:*

Otto Theodore Geckeler,	Atlanta, Ga.,	3717 Locust St.
A. B. (Indiana, 1894). Junior Professor of Mathematics, Georgia School of Technology, 1903-1905; Acting Professor, 1905-1906; Head of Department, 1906-1908. Mathematics, Physics; first year.		

*In Pedagogy:*

Name.	Residence.	City Address.
Emmanuel Wilson Cober,	Philadelphia,	1215 N. 56th St.
A. B., A. M. (Bucknell, 1899, 1905). Instructor in Friends' Central School, 1901-1908. Pedagogy, Philosophy; seventh year.		

*In Psychology:*

Aaron Moyer Snyder,	Mt. Penn,	Dorm. 314 Leidy.
A. B. (Franklin and Marshall, 1901). Harrison Scholar in Psychology, September, 1907, to March, 1908; Harrison Fellow, March to June, 1908. Psychology, Pedagogy, Philosophy; third year.		

*In Philology:*

Eugene Watson Burlingame, Albany, N. Y.,	Dorm. 118 McKean.
A. B., A. M. (Yale, 1898, 1902). Master in Greek, St. Luke's School, 1903-1908. Indo-European Philology, Semitics, Anthropology; third year.	

*In Romanics:*

Solomon Leopold Millard Rosenberg,	Heilbronn, Germany, 3934 Pine St.
B. S., A. M. (Pennsylvania, 1907, 1907). Traveling Fellow in Romanics, 1905-1906. Harrison Fellow, 1907-1908. Romanics; third year.	

*In Semitics:*

Benson Brush Charles,	Salamanca, N. Y., 3735 Sansom St.
A. B. (Cornell, 1906). Assistant in Semitics, Cornell University, 1906-1907. Member of Cornell Expedition to Asia Minor and the Assyro-Babylonian Orient, 1907-1908. Assyrian, Arabic, Indo-European Philology; first year.	

*In Sociology:*

Robert Gildersleeve Paterson, Columbus, Ohio,	3931 Pine St.
A. B., A. M. (Ohio, 1905; Columbia, 1907). Fellow in New York School of Philanthropy, 1905-1906. Graduate student, Columbia University, 1906-1907. Harrison Fellow in Sociology, 1907-1908. Sociology, Economics, Political Science; second year.	

*In Zoology:*

Gideon Stanhope Dodds,	La Junta, Colo., 4128 Chester Ave.
A. B., A. M. (Colorado, 1904, 1905). Instructor in Biology, University of Colorado, 1905-1908. Zoology, Physiology, Botany; first year.	

## SPECIAL FELLOWSHIP IN PHILOSOPHY, 1908-1909.

Seymour Guy Martin,	Oxford, N. Y., Dorm. 25 Morris.
A. B. (St. Stephen's College, 1907). Student, University of Chicago, Summer Session, 1906. University Scholar in Philosophy, 1907-1908. Philosophy, Psychology, Mathematics; second year.	

## SCHOLARSHIPS.

*In Chemistry:*

Thomas Rush Alexander, Jr., Washington,	218 S. 37th St.
A. B., A. M. (Washington and Jefferson, 1905, 1906). Chemistry; second year.	
Benjamin Engle Kraybill, Steelton,	24 S. 34th St.
Ph. B. (Franklin and Marshall, 1908). Chemistry; first year.	

*In English:*

Name.	Residence.	City Address.
Arthur Llewellyn Eno,	Charlotte, Vt.,	Dorm. 338 Foerderer.
A. B., A. M. (Brown, 1895; Harvard, 1902). Assistant in English, Brown University, 1895-1896; Instructor in English and German, University of Vermont, 1898-1900. Graduate student, Harvard University, 1900-1902; Instructor in English, University of Texas, 1902-1904; ibid., University of Illinois, 1904-1908.		

*In Mathematics:*

John Clemmer Bechtel,	Paoli,	Dorm. 427 Baldwin.
B. S. (Pennsylvania, 1908).	Mathematics, Physics, Botany; first year.	

*In Philosophy:*

William Roy McNutt,	Ottawa, Kans.,	4107 Locust St.
A. B. (Ottawa, 1908).	Philosophy, English; first year.	

*In Physics:*

Dicran Hadji Kabakjian,	Sivas, Armenia in Turkey,	4712 Woodland Ave.
A. B., M. S. (Anatolia College, Marsovan, Turkey, 1896; Pennsylvania, 1907). Physics, Mathematics; fourth year.		

*In Sociology:*

Allen Klein Faust, Rev.,	Lansdale.	
A. B., A. M. (Franklin and Marshall, 1897, 1900). Student, Reformed Theological Seminary, Lancaster, 1897-1900. Professor of History and Pedagogy in the North Japan College, 1900-1907. Held Half University Scholarship in History, 1907-1908. Sociology, European History, Pedagogy; second year.		

*In Zoology:*

John Linck Ulrich,	New York, N. Y.,	3615 Locust St.
B. S. (Pennsylvania, 1908).	Zoology, Botany, Geology; first year.	

## ON THE JOHN FRIES FRAZER FOUNDATION.

## FELLOWSHIP.

*In Physics:*

Cassius Eugene Hiatt,	Kirklin, Ind.,	3731 Locust St.
A. B., A. M. (Indiana, 1905, 1906). Assistant in Astronomy, Indiana, 1905-1906. Instructor in Physics, 1906-1907. Frazer Fellow in Physics, 1907-1908.		

## ON THE HECTOR TYNDALE FOUNDATION.

## FELLOWSHIP.

*In Physics:*

Calvin Naftzinger Wenrich,	Robesonia,	24 S. 34th St.
A. B., A. M. (Franklin and Marshall, 1902, 1905). Teacher of Science, Franklin and Marshall Academy, 1902-1904; 1906-1907. Instructor in Physics, Pennsylvania, 1907-1908. Physics, Mathematics; second year.		

## ON THE JOSEPH M. BENNETT FOUNDATION.

## FELLOWSHIPS.

*In English:*

Name.	Residence.	City Address.
Mina Kerr,	Newport,	220 De Kalb Sq.
A. B. (Smith, 1900). University Scholar in English, 1906-1907; Moore Fellow, 1907-1908.	English, Philosophy; third year.	

*In History:*

Nancy Elnora Scott,	Fort Wayne, Ind.,	206 De Kalb Sq.
A. B., A. M. (Indiana, 1902, 1907). Assistant in History, Indiana University, 1906-1907. Special Fellow in History, Pennsylvania, 1907-1908. European History, American History, English Literature; second year.		

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## ON THE MRS. BLOOMFIELD MOORE FOUNDATION.

## FELLOWSHIPS.

*In Classics:*

Ida L. K. Miller,	Philadelphia,	436 E. Walnut Lane, Germantown.
A. B. (Temple College, 1907). Held Half University Scholarship in Classics, 1907-1908. Greek, Latin, Sanskrit; second year.		

*In History:*

Neva Ruth Deardorff,	Ann Arbor, Mich.,	3735 Spruce St.
A. B. (Michigan, 1908). American History, European History, Sociology; first year.		

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## ON THE FRANCES SERGEANT PEPPER FOUNDATION.

## FELLOWSHIP.

*In Chemistry:*

Jessie Elizabeth Minor,	Springfield, Mo.,	214 De Kalb Sq.
B. S. (Drury College, 1904). Student, University of Chicago, Summer Sessions, 1906, 1907. Assistant in Chemistry and Acting Head of Department, Drury College, 1906-1908. Chemistry; first year.		

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## UNIVERSITY FELLOWSHIPS AND SCHOLARSHIPS.

## FELLOWSHIPS FOR RESEARCH.

*In English:*

John Louis Haney,	Philadelphia,	934 N. 11th St.
B. S., Ph. D. (Pennsylvania, 1898, 1901). Harrison Scholar in English and History, 1898-1899. Harrison Fellow in English, 1899-1900. Reappointed for 1900-1901, but resigned. Instructor in English and History, Central High School, Philadelphia, 1900, to December, 1903; Assistant Professor, January 1, 1904, to 1906; Professor of English Philology, 1906 to date. Honorary Fellow in English, 1901-1903. University Fellow for Research in English, 1903-1908.		

*In Philosophy:*

Name.	Residence.	City Address.
Isaac Husik,	Philadelphia,	612 S. 10th St.

A. B., A. M., Ph. D. (Pennsylvania, 1897, 1899, 1903). University Scholar in Mathematics and Astronomy, 1897-1899. University Scholar in Classics, 1899-1902. University Fellow for Research in Philosophy, 1903-1908.

*In Zoology:*

Herbert Guy Kribs, Rev.,	Philadelphia,	300 Highland Ave., Chestnut Hill.
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A. B., B. D., Ph. D. (Oberlin, 1898; Union Theological Seminary, 1904; Pennsylvania, 1908). Graduate student, University of Pennsylvania, 1904-1908.

## FELLOWSHIP.

*In Mineralogy:*

Edgar Theodore Wherry,	Philadelphia,	1729 Norris St.
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B. S. (Pennsylvania, 1906). Harrison Fellow in Mineralogy, 1907-1908. Instructor in Mineralogy, Lehigh University, 1908. Mineralogy; third year.

## SCHOLARSHIPS.

*In Chemistry:*

James Gardner Goodwin,	Philadelphia,	3931 Pine St.
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B. S., M. S. (Wesleyan, 1899; Iowa, 1904). Associate Professor, Natural Sciences, Simpson College, 1899-1903. Fellow in Chemistry, University of Iowa, 1903-1904. Assistant in Chemistry, University of Pennsylvania, 1907 to date. Chemistry; second year.

Otto Mitchell Smith,	Springfield, Mo.,	3726 Sansom St.
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B. S. (Drury College, 1907). Student, Chicago University, Summer Session, 1907. Instructor in Chemistry and Physics, Springfield High School, 1907-1908. Chemistry; first year.

*In Classics:*

Albert Billheimer,	Gettysburg.	
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A. B. (Pennsylvania College, 1906). Greek, Latin, Roman Archaeology; first year.

Bessie Rebecca Burchett,	Philadelphia,	"The Springside," Chestnut Hill.
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A. B., A. M. (Temple College, 1903; Pennsylvania, 1908). Held Half University Scholarship in Classics, 1907-1908. Greek, Latin; sixth year.

Franklin Jonathan Miller,	Philadelphia,	5342 Chestnut St.
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A. B. (Lafayette, 1889). Student, Union Theological Seminary, 1889-1892. University Scholar in Classics, 1907-1908. Latin, Greek; fourth year.

*Wellington Eugene Van-	Middleburgh, N.Y., [506 W. 9th St., Wormer, Ph. B. (Union, 1901). Held Half University Scholarship in Classics, 1907-1908. Latin; third year.	Chester, Pa.]
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\*Holder of a Half-Scholarship.

*In Economics:*

Name.	Residence.	City Address.
*John Ellwood Calhoun,	Philadelphia,	2230 Catharine St.
B. S. (Pennsylvania, 1907). Instructor in Commerce, Southern Manual Training High School, Philadelphia, 1907 to date. Transportation and Commerce, Economics; second year.		

Nellie Marguerite Seeds      Philadelphia,      5222 Laurens St., Gtn.  
Nearing,  
A. B. (Bryn Mawr, 1908). Economics, European History; first year.

*In English:*

*William Webster Chandler,	Collegeville.	
A. B., A. B. (Amity, 1892; Ursinus, 1907). Professor of English, Amity College, 1891-1894; ibid., Catawba College, 1902. Professor of Public Speaking, Ursinus, 1903 to date. English; second year.		
*Benjamin Aumiller Kline,	Liverpool,	[North Wales.]
Ph. B. (Lafayette, 1903). Principal of Public Schools, North Wales. Pedagogy, Sociology; third year.		

Isabella Rachael Gill,      Philadelphia,      228 West Logan Sq.  
A. B., A. M. (Smith, 1905; Pennsylvania, 1907). University Scholar in English, 1905-1906; Held Half University Scholarship, 1907-1908. English, Philosophy; fourth year.

*In Germanics:*

Thomas Kite Brown, Jr.,	Haverford,	[Haverford College.]
A. B., A. M. (Haverford, 1906, 1907). Fellow, Haverford, 1906 to 1907. Instructor in German, ibid., 1907 to date. Held Half University Scholarship in Germanics, 1907-1908. Germanics; second year.		
Charles Frederick Dapp, Rev.,	Sumneytown.	
A. B., A. B. (Wagner College, 1902; Muhlenberg, 1907). Student, Lutheran Theological Seminary, Mt. Airy, 1902-1905. Student, University of Berlin, 1907-1908. Germanics; first year.		
Newell Wheeler Sawyer,	Washington, D. C.,	2122 Arch St.
Ph. B. (Dickinson College, 1908). Germanics, English Literature; first year.		
Benjamin Franklin Schapelle,	Philadelphia,	3026 Diamond St.
A.B. (Dickinson College, 1908). German Literature, German Philology, English; first year.		

*In History:*

John Andrew Lesh,	Stroudsburg,	3609 Locust St.
Ph. B., B. D. (Taylor University, 1906; Drew Theological Seminary, 1908). American History, European History, Sociology; first year.		
Ella Lonn,	LaPorte, Ind.,	3803 Spruce St.
Ph. B. (Chicago, 1900). American History, European History, Political Science; first year.		

\*Holder of a Half-Scholarship.

Name.	Residence.	City Address.
*William Ely Roberts,	George School,	1446 Blavis St.
A. B. (Swarthmore, 1903).	American History, European History; fourth year.	

*Helen Bell Trimble,	Philadelphia,	838 Highland Ave.
A. B., A. M. (Bryn Mawr, 1902, 1905).	History, Latin; first year.	

*In Mathematics:*

*Walter Ross Marriott,	Monon, Ind.,	[Swarthmore.]
A. B., A. B., A. M. (Valparaiso, 1903; Indiana, 1906; Swarthmore, 1907). Held Half University Scholarship in Mathematics, 1907-1908. Instructor in Mathematics, Swarthmore, 1907 to date. Mathematics; second year.		

*In Pedagogy:*

Edward Clinton Bixler,	Westminster, Md.,	3416 Sansom St.
A. B., A. M. (Western Maryland College, 1901, 1905).	Pedagogy, Latin; second year.	

*John Linwood Eisenberg,	Royersford.	
A. B., A. M. (Ursinus, 1906, 1908). Held Half University Scholarship in Pedagogy. Second Term, 1907-1908. Pedagogy, Psychology, Sociology; third year.		

*Charles Brady Pennypacker,	York.	
A. B., A. M. (Franklin and Marshall, 1897, 1900). Pedagogy, Psychology, Sociology; third year.		

*Alvin E. Wagner,	Nesquehoning.	
A. B., A. M. (Ursinus, 1903, 1908). Held Half University Scholarship in Pedagogy, 1907-1908. Psychology, Sociology; third year.		

*Charles Adam Wagner,	West Chester.	
A. B., A. M. (Ursinus, 1906, 1908). Held Half University Scholarship in Pedagogy, 1907-1908. Pedagogy, Psychology, Sociology; third year.		

*In Philosophy:*

George Johnson, Rev.,	Lincoln University.	
A. B. (Pennsylvania, 1893). Student, Princeton Theological Seminary, 1893-1896. Professor of Systematic Theology, Lincoln University, 1902 to date. Philosophy, Ethics, Psychology; first year.		

Jane Roberts Harper,	Philadelphia,	2d St. Pike and Wyoming Ave.
A. B. (Swarthmore, 1906). University Scholar in Philosophy, 1906 to 1908. Philosophy, Sociology, English; third year.		

*In Political Science:*

Frank Ely Breyfogel,	Reading,	3710 Locust St.
A. B. (Haverford, 1906).	Political Science, Economics, History; first year.	

*In Psychology:*

*Norman Cameron,	Elkton, Md.	
A. B., A. M. (Washington College, 1895, 1900). Held Half University Scholarship in Psychology, 1907-1908. Principal, High School, Elkton, Md. Psychology, Pedagogy; second year.		

\* Holder of a Half-Scholarship.

Name.	Residence.	City Address.
<b>Francis Norton Maxfield,</b>	<b>Philadelphia,</b>	<b>164 Mayland St., Gtn.</b>
A. B. (Haverford, 1897). Held Half University Scholarship in Psychology, 1907-1908. Psychology, Sociology; fourth year.		

\*Elmer Bergey Ziegler, Conshohocken.

A. B., A. M. (Ursinus, 1906; Pennsylvania, 1908). Held Half University Scholarship in Psychology, 1907-1908. Superintendent, Conshohocken Public Schools. Pedagogy, Psychology; third year.

#### *In Romanics:*

**Attilio Filippo Sbedico,** South Vito, Chietino, 1503 Dickinson St. Italy,

Diploma di Licenza Liceale (Collegio Gianbattista Vico in Chieti, Italy, 1903). A. M. (Pennsylvania, 1907). University Scholar in Romanics, 1905-1908. Italian, Spanish, Latin; fourth year.

#### *In Semitics:*

**Frank Macknight Gray, Rev., Philadelphia,** 1207 N. 25th St.  
A. B. (Pennsylvania, 1905). Semitics, Latin, History; third year.

**John Meighan, Rev.,** New Britain.

A. B., B. D. (Temple College, 1907; Crozer Theological Seminary, 1905). Instructor in Hebrew and Greek, Crozer Seminary, 1904-1906. Hebrew, Assyrian, Ethics; second year.

\*William Warren Sweet, Rev., Langhorne.

A. B., B. D. (Ohio Wesleyan, 1902; Drew Theological Seminary, 1906). Graduate student, Columbia, 1905-1906. Semitics, American History; third year.

#### *In Sociology:*

\*Franklin Kline Fretz, Philadelphia, 1834 N. Camac St.  
A. B., A. M. (Muhlenberg, 1897, 1900). Held Half University Scholarship in Anthropology, 1907-1908. Sociology, Anthropology; fourth year.

#### REGULAR STUDENTS.

**Adams, Edith,** Philadelphia, 4438 Sansom St.  
A. B. (Wellesley, 1908). Sanskrit; first year.

**Alleman, Herbert Christian,** Philadelphia, 1702 Oxford St.  
A. B., A. M. (Gettysburg, 1887, 1890). Semitics, Archaeology; third year.

**Allen, Ezra,** Philadelphia, 745 Corinthian Ave.  
A. B., A. M. (Bucknell, 1895, 1896). Fellow, Clark University, 1900. Professor of Biology, Montana State Normal College, 1903-1906. Assistant Professor of Biology, Central High School, Philadelphia, 1907 to date. Neurology, Physiology; first year.

**Allen, Jessie Edith,** Philadelphia, 1830 Green St.  
A. B. (Wellesley, 1887). Teacher of Greek and Latin, Nashville, Tenn., 1887-1888. Principal, Warren High School, Warren, Pa., 1888, 1889, 1890. Latin; second year.

\*Holder of a Half Scholarship.

Name.	Residence.	City Address.
Ambler, Lewis Bartleson,	Jenkintown.	
B. S. A. M. (Pennsylvania, 1900, 1902). Special student, Pennsylvania, 1896 to February, 1897. University Scholar in Pedagogy, 1900-1903. Pedagogy, Psychology, American History. Absent on leave, 1905 to date.		
Ames, Margaret Ellen,	Norristown.	[1025 DeKalb St.]
A. B. (Elmira College for Women, 1897). Teacher, Norristown High School, 1906 to date. English Literature, English Philology; second year.		
Anderson, Edith L.,	Roslindale, Mass.,	1211 Locust St.
Graduate, Prince of Wales College, Charlottetown, P. E. I., 1897. English Literature; first year.		
Andrews, Lucille,	Woodbury, N. J.,	1532 Mt. Vernon St.
A. B. (Temple, 1908). Teacher of Botany, Commercial High School for Girls, 1896 to date. Zoology; first year.		
Ayres, Lyndon Ernest,	Clifford,	179 W. Seymour St.
B. A. (Bucknell, 1901). Classics; second year.		
Babb, Maurice Jefferis,	Ardmore,	College Hall.
B. S. (Haverford, 1905). Instructor in Mathematics, The Pennsylvania State College, 1901-1905; ibid., University of Pennsylvania, 1905 to date. Mathematics, Astronomy; fourth year.		
Barba, Preston Albert,	Allentown,	3952 Pine St.
A. B., A. M. (Muhlenberg, 1906; Yale, 1907). Professor of German, Western Maryland College, 1907-1908. Assistant in German, University of Pennsylvania, 1908. German Literature, German Philology, English; first year.		
Beale, Jennie Ritner,	Philadelphia,	815 Corinthian Ave.
A. B. (Wellesley, 1896). Teacher, Holman School, Philadelphia, 1901 to date. English Literature, Philosophy; second year.		
Beazley, William Oswald,	Sparta, Va.,	[Crozer Theological Seminary, West Chester, Pa.]
A. B. (Richmond College, 1906). Principal of Wakefield, North Carolina, High School, 1906-1907. Principal of Newport News, Virginia, Academy, 1907-1908. Student, Crozer Theological Seminary, 1908. Philosophy, Sociology; first year.		
Bickel, George Allen,	Rehrersburg,	3929 Baltimore Ave.
A. B. (Franklin and Marshall, 1905). Teacher at Stevens' High School, Lancaster, Pa., 1905-1907. Assistant in German, University of Pennsylvania, 1908. Germanics; second year.		
Blancké, Wilton Wallace,	Philadelphia,	230 S. 45th St.
A. B., A. M. (Pennsylvania, 1905, 1906). Harrison Fellow in Classics, 1905-1906. Instructor in Latin, Central High School, Philadelphia. Latin; fourth year.		
Boehm, Walter Martinus,	Philadelphia,	5348 Chancellor St.
B. S. (Iowa, 1902). Instructor in Physics, University of Utah, 1904-1905. Adjunct Professor of Physics, Cornell College, 1905-1906. Physics, Mathematics; second year.		
Boewig, Harriet,	Philadelphia,	2337 Bolton St.
B. S. (Pennsylvania, 1901). University Scholar in Botany, 1901-1903. Student, Marine Biological Laboratory, Wood's Hole, 1900-1902. Botany, Pedagogy, Germanics. Absent on leave.		

## GRADUATE SCHOOL.

Name.	Residence.	City Address.
Brecht, Samuel Kriebel,	Lansdowne.	
B. S. (Haverford, 1896). Assistant Professor of Mathematics, Central High School, Philadelphia. Germanics, European History; sixth year.		
Brewster, Ethel Hampson,	Chester,	[605 E. 14th St.]
A. B. (Swarthmore, 1907). Teacher of Latin, Greek and French, Chester High School. Latin; first year.		
Bright, Henry Waller, Rev.,	Norristown.	
A. B., A. M. (Franklin and Marshall, 1892). Sociology, Semitics, Pedagogy; fourth year.		
Brown, Glenn Vinton,	Reisterstown, Md.,	214 DeKalb Sq.
Ph. B., A. M. (Dickinson, 1898, 1899). Graduate student in Chemistry, Johns Hopkins University, 1898-1899. Instructor in Physics, University of Pennsylvania, 1907 to date. Chemistry; second year.		
Brown, Sara Wilde Kistler,	Carlisle,	214 DeKalb Sq.
B. S. (Dickinson, 1901). Mathematics, Psychology; first year.		
Bye, Frank Paxson,	West Chester.	
B. S. (Pennsylvania, 1907). Superintendent of Public Schools, Chester County, 1896-1899. President, Darlington Seminary, 1899 to date. Economics; second year.		
Cadwallader, Carrie Virginia,	Philadelphia,	1711 N. 17th St.
B. S. (Temple, 1905). English Philology; second year.		
Chambers, George Gailey,	Lansdowne,	[55 E. Essex Ave.]
A. B., Ph. D. (Dickinson, 1902; Pennsylvania, 1908). Principal of Public Schools, Ridley Park, Pa., 1902-1906. Harrison Scholar in Mathematics, 1905-1906. Instructor in Mathematics, Pennsylvania, 1906 to date. Enters to pursue certain special work.		
Chapman, Elsie May,	Philadelphia,	456 Rising Sun Ave.
A. B. (Cornell, 1908). Greek, Latin; first year.		
Child, Frederic Anthony,	Philadelphia,	318 S. 40th St.
A. B., A. M. (Pennsylvania, 1905-1906). University Scholar in English 1905-1906. Instructor in English, University of Pennsylvania, 1906 to date. English Literature; fourth year.		
Clark, Bertha May,	Baltimore, Md.,	4317 Walnut St.
A. B., Ph. D. (Woman's College, Baltimore, 1900; Pennsylvania, 1907). Graduate student, Bryn Mawr, 1900-1901. Instructor, Woman's College Baltimore, 1901-1903. Student, University of Göttingen, Germany, 1903-1905. University Scholar in Physics, 1905-1906; Moore Fellow, 1906-1907. Teacher of Physics, Commercial High School for Girls, 1907 to date. Enters to pursue certain special work.		
Coates, George Washington,	Beaver Falls, Dorm. 33 Memorial Tower.	
B. S. (Pennsylvania Military Academy, 1907). Chemistry; second year.		
Cochran, Joseph Hunsicker,	Wyncote,	3453 Woodland Ave.
B. S. (Pennsylvania, 1908). Political Science, Economics; first year.		
Collins, Stanley Browning,	Marshalltown, Iowa, Houston Hall.	
A. B., A. M. (Morningside, 1907; Pennsylvania, 1908). American History, European History; second year.		

Name.	Residence.	City Address.
Collins, Wilkie Nelson,	Alpena, Mich., Dorm. 23 Memorial Tower. A. B. (Michigan, 1905). Instructor in English, University of Pennsylvania, 1905-1906 and 1908. English Literature; second year.	
Connor, Hiram Blackstone,	Philadelphia, A. B. (Temple College, 1903). American History; sixth year.	3658 Frankford Ave.
Cope, Thomas Darlington,	West Chester, A. B. (Pennsylvania, 1903). Physics, Mathematics; third year.	221 S. 38th St.
Corson, Livingston,	New York City, B. S. (Pennsylvania, 1904). Assistant in English, Pennsylvania, 1905-1906. University Scholar in Germanics, Columbia, 1906-1907. English Literature, English Philology, Germanics. Absent on leave.	[1002 Hartley Hall, Columbia University]
Coulomb, Charles Augustin,	Philadelphia, B. S. (Temple, 1905). American History; fourth year.	4249 Girard Ave.
Cowgill, Albert Gray,	Philadelphia, A. B., B. S. (Earlham College, 1901; Pennsylvania, 1907). Economics, Pedagogy; second year.	63d and Malvern Ave., Overbrook.
Craig, William Frederic,	Philadelphia, A. B., A. M. M. D. (Temple, 1905; Pennsylvania, 1907; Medico-Chirurgical, 1897; Pennsylvania, 1902). Instructor in Anatomy Medico-Chirurgical College, 1898-1901. Lecturer on Psychiatry, Temple College, 1902-1903. Assistant Professor of Biology, Philadelphia Central High School, 1907 to date. Psychology, Psychiatry, Zoology; fourth year.	1045 Tioga St.
Crane, Ronald Salmon,	Tecumseh, Mich., Dorm. 420 McKean. A. B. (Michigan, 1908). Assistant in European History, University of Michigan, 1907-1908. Assistant in English, University of Pennsylvania, 1907-1908. English Literature, English Philology, English History; first year.	
Crawford, Anne Lathrop,	Philadelphia, A. B. (Wellesley, 1907). Assistant in Psychology, Wellesley College, 1907-1908. Philosophy; first year.	3239 Powelton Ave.
Cropp, Joseph Franklin,	Richmond, Va., A. B. (Richmond College, 1908). Student, Crozer Theological Seminary, West Chester.]	[Crozer Theological Seminary, West Chester.]
Dague, John Huffman, Jr.,	Scenery Hill. A. B. (Washington and Jefferson, 1906). Student in Crozer Theological Seminary, 1906-1908. Psychology, Sociology, Pedagogy. Absent on leave, studying abroad.	
DeGreene, Caroline Elizabeth, Lansdowne,	140 N. 16th St. Ph. B., A. M. (Earlham, 1893; Michigan, 1903). Graduate student, Berlin, 1890-1900; Michigan, 1900-1902. German Literature, German Philology; third year.	

## GRADUATE SCHOOL.

Name.	Residence.	City Address.
Dutcher, John Benjamin,	Philadelphia,	2014 S. 64th St.
A. B., A. M. (Indiana, 1906, 1907). Instructor in Physics, University of Pennsylvania, 1908. Physics; first year.		
Eaton, Esther,	Columbus, Ohio,	3217 Spencer Terrace.
A. B. (Vassar College, 1905). Sociology, Economics; first year.		
Eberlein, Harold Donaldson, Philadelphia,	Osage Ave. and 44th St.	
A. B. (Pennsylvania, 1896). Harrison Scholar in History and Philosophy, 1896-1897. Master of History and Latin, Phillips Brooks School, Philadelphia. European History, Economics; second year.		
Ebert, Forley Astor,	Merchantville, N. J.	
A. B., A. M. (Muhlenberg, 1895-1898). Principal of Schools, Island Heights, N. J., 1896-1903; Lehighton, Pa., 1903-1906; Pensauken, N. J., 1906 to date Pedagogy, Psychology; first year.		
Eckhardt, Engelhardt August,	Philadelphia,	903 N. 5th St.
B. S. (Pennsylvania, 1908). Assistant in Physics, University of Pennsylvania, 1908. Physics, Mathematics; first year.		
Edson, Helen Wheatley,	New York, N. Y.,	8 S. 12th St.
A. B., A. M. (Mt. Holyoke, 1903; Pennsylvania, 1908). University Scholar in English, 1906. English Literature; third year.		
Ellis, Alta Grace,	West Chester,	[37 S. High St.]
Ph. B. (Oberlin, 1899). Germanics; second year.		
Evans, Abel Jones,	Philadelphia,	5215 Chester Ave.
B. S. (Temple College, 1906). Pedagogy, Psychology; third year.		
Feidt, Josephine Thorpe,	Fort Miller, N. Y.,	238 S. 39th St.
A. B., A. M. (Wellesley College, 1895, 1897). Sociology; first year.		
Fernberger, Samuel Weiller,	Philadelphia,	1306 N. Broad St.
B. S. (Pennsylvania, 1908). Assistant in Psychology, University of Pennsylvania, 1908. Psychology, Sociology; first year.		
Fey, Richard,	Berlin, Germany,	225 S. 52d St.
Graduate, Berlin Technical School, 1895. Assistant in German, University of Pennsylvania, 1907 to date. Germanics, Romanics; second year.		
Filler, Mervin Grant,	Carlisle,	3405 Baring St.
A. B., A. M. (Dickinson, 1893, 1895). Professor of Latin, Dickinson College, 1899 to date. Classical Languages. Absent on leave since 1907.		
Fineman, Hayin,	Philadelphia,	317 Reed St.
B. S. (Pennsylvania, 1907). English Literature, English Philology, Philosophy; first year.		
Fleck, Wilbur Henry,	Tyrone,	232 S. Cecil St.
A. B. (Gettysburg, 1902). Vice Principal, High School, Hasleton, 1902-1907. Master of Latin, Blight School, 1907 to date. Pedagogy, Psychology; second year.		
Fleming, Ralph Douglas;	Philadelphia,	1732 Oxford St.
A. B., A. M. (Leland Stanford, 1906; Pennsylvania, 1907). Economics, Political Science, Transportation and Commerce. Absent on leave.		

Name.	Residence.	City Address.
Forsyth, Edmund Clark,	Little Falls, N. Y., [Crozer Theological Seminary, West Chester.]	
A. B. (Colgate, 1904). Student, Crozer Theological Seminary, 1906 to date. English Literature, English Philology; first year.		
Fugate, Edwin Lindsay, Jr., Philadelphia,	3417 W. Cumberland Street.	
A. B. (Temple College, 1903). Economics, Sociology, Political Science. Absent on leave.		
Galbraith, Thomas Robert, Philadelphia,	2132 N. 5th St.	
B. S. (Pennsylvania, 1897). Instructor in English and History, Central High School, Philadelphia, 1897-1903; Assistant Professor, 1903-1907; Professor of History, 1907 to date. European History, Political Science, American History; fourth year.		
Garbrick, Clarence Arthur, Bellefonte,	47 N. 54th St.	
A. B. (Princeton, 1903). Master in Mathematics and History, Blight School, 1905 to date. English History; fourth year.		
Garner, Albert Rowland, Norristown.		
B. S., M. S. (Bucknell, 1899, 1903). Psychology; first year.		
Garrett, Ida Mercette, Philadelphia,	1924 S. 16th St.	
A. B. (Bryn Mawr, 1906). Psychology; second year.		
Garwood, Helen, Williamstown, N. J., 2005 Chestnut St.		
A. B., A. M. (Wellesley, 1898; Pennsylvania 1907). English Literature, English Philology, Philosophy; fifth year.		
Gates, Fanny Cook, Waterloo, Iowa.		
A. B., A. M. (Northwestern, 1894, 1895). Graduate Student, Bryn Mawr College, 1895-1897; Göttingen, 1897-1898; McGill University, 1902-1903. Instructor in Physics, Woman's College, Baltimore, 1898-1900; Associate Professor, ibid., 1900-1906; Professor, ibid., 1906 to date. Physics, Mathematics. Absent on leave.		
Gendell, Annie Ashbrook, Philadelphia,	835 N. 63d St.	
A. B. (Bryn Mawr, 1907). Teacher of Latin and English, Conshohocken High School. Latin; first year.		
Gerhard, Elmer Schultz, Trenton, N. J., [163 Monmouth St.]		
A. B., A. M. (Princeton, 1900, 1901). Principal of High School, Huntingdon, Pa., 1904-1907. Teacher of English and German, High School, Trenton, N. J., 1907 to date. Germanics; first year.		
Gerson, Armand Jacques, Philadelphia,	3866 Girard Ave.	
B. S. (Temple College, 1905). European History, American History, Sociology; fourth year.		
Gerson, Oscar, Melrose Park,	17th and Wood Sts.	
Ph. D. (Pennsylvania, 1898). Instructor in English, Central Manual Training School, 1905 to date. Professor of Pedagogy, Temple College, 1906 to date. Enters to pursue certain special work in English.		
Gillan, Charles McDowell, Philadelphia,	2462 N. 29th St.	
B. S. (Pennsylvania, 1906). Chemistry; third year.		
Gisriel, Stewart Wesley, Baltimore, Md., 3733 Locust St.		
A. B., B. D. (Taylor University, 1904; Drew Theological Seminary, 1907). Student, Glasgow University, Glasgow, Scotland, 1907-1908. Archaeology, Anthropology, History; first year.		

Name.	Residence.	City Address.
Godfrey, Myra Olive, A. B. (Oberlin, 1902).	Philadelphia, English Literature; second year.	2427 Nicholas St.
Goldbaum, Jacob Samuel, B. S. (Pennsylvania, 1908).	Philadelphia, Instructor in Chemistry, University of Pennsylvania, 1908. Chemistry; first year.	1745 N. 8th St.
Gottshall, Harvey Stauffer,	Lansdale.	
A. B. (Ursinus, 1904).	Held Half University Scholarship in Pedagogy, 1907-1908. Pedagogy; third year.	
Grabosky, Hyman Leo,	Philadelphia,	1611 N. 7th St.
A. B., A. M. (Pennsylvania, 1902, 1904); Harrison Fellow, 1903-1904; University Scholar, 1904-1905.	Harrison Scholar in Classical Languages, 1902-1903; Harrison Fellow, 1903-1904; University Scholar, 1904-1905. Latin, Greek, Philosophy. Absent on leave.	Latin, Greek, Philosophy. Absent on leave.
Greene, Garton Spence,	Philadelphia,	6715 Leeds St.
A. B. (Pennsylvania, 1908).	Teacher of Latin and Mathematics, High School, Sellersville, Pa., 1908. Latin; first year.	
Gwynn, Edmund Janes, Rev., B. S., A. B., M. A. (Dickinson Seminary, 1882; Illinois Wesleyan, 1887, 1889; Pennsylvania, 1908).	Elmer, N. J., President, Scio College, Scio, Ohio, 1900-1902; Keystone College, Martinsburg, Pa., 1902-1905. Student, Princeton Theological and Graduate Schools, 1905-1906. Philosophy, Ethics. Absent on leave first term.	1433 Walnut St.
Gyllenhaal, Leonard Ephraim,	Bryn Athyn.	
A. B. (Chicago, 1905).	Graduate student, University of Chicago, 1908. English Literature; first year.	
Hall, Mary Bowers,	Saco, Me.	
B. L., M. A. (Smith, 1895; Radcliffe, 1899).	Instructor in Zoology, Wellesley, 1899-1904; Absent on leave, 1904-1907. University Scholar in Zoology, 1905-1906; Bennett Fellow, 1906-1907. Zoology, Physiological Zoology, Neurology. Absent on leave.	Instructor in Zoology, Wellesley, 1899-1904; Absent on leave, 1904-1907. University Scholar in Zoology, 1905-1906; Bennett Fellow, 1906-1907. Zoology, Physiological Zoology, Neurology. Absent on leave.
Hardenberg, Christian Bern-	Madison, Wis.,	2050 Cherry St.
hardus,		
A. B., A. M. (Wisconsin, 1905, 1906).	Student in Medicine, University of Utrecht, 1892-1897. Scholar in Biology, 1905-1906; Fellow, 1906-1907, University of Wisconsin. Zoology, Botany. Absent on leave.	Student in Medicine, University of Utrecht, 1892-1897. Scholar in Biology, 1905-1906; Fellow, 1906-1907, University of Wisconsin. Zoology, Botany. Absent on leave.
Hardt, Walter Keller,	Philadelphia,	40 N. 50th St.
B. S. (Pennsylvania, 1905).	Instructor in Accounting, University of Pennsylvania. Finance; second year.	
Harkins, Melvin Reece,	Forest Hill, Md.,	3731 Locust St.
A. B. (Western Maryland College, 1905).	Graduate student, Johns Hopkins, 1905-1906. Instructor in Physics, Pennsylvania, 1906-1907. Physics, Mathematics; third year.	Graduate student, Johns Hopkins, 1905-1906. Instructor in Physics, Pennsylvania, 1906-1907. Physics, Mathematics; third year.
Harper, Daniel Roberts, 3d,	Philadelphia,	Rising Sun and Wyoming Aves.
B. S., A. M. (Pennsylvania, 1905, 1908).	Instructor in Physics, Pennsylvania, 1904 to date. Tyndale Fellow in Physics, 1907-1908. Physics, Mathematics, Philosophy; fourth year.	

Name.	Residence.	City Address.
Heffner, William Clinton,	Pine Grove,	3318 Woodland Ave.
A. B., A. M., Ph. D. (Gettysburg, 1893, 1896; Wooster, 1901). Student, Gettysburg Theological Seminary, 1893-1896. Teacher, Pierce School, January, 1904-1908. Assistant in History, Pennsylvania, 1908. Sociology, American History; second year.		
Hegemann, Werner,	Munich, Germany,	4119 Pine St.
Dr. Oec. Pub. (Munich, 1908). Student at Berlin, Paris, Pennsylvania, Strassburg, Munich, 1901-1908. Enters to pursue certain special work.		
Hering, Ambrose,	Kutztown,	7301 Germantown Ave.
A. B. (Muhlenberg, 1907). Sociology; second year.		
Hiatt, James Smith,	Philadelphia,	5627 Musgrave St., Gtn.
B. L., A. B. (Earlham College, 1899; Haverford, 1900). Pedagogy; fourth year.		
Higgins, Lucius Luke, Rev.,	Philadelphia,	940 W. Lehigh Ave.
A. B. (Hiram, 1907). Philosophy, Psychology, English Literature; second year.		
Hodges, Austin Lawrence,	Darlington, S. C.,	3332 Walnut St.
B. S. (South Carolina Military Academy, 1904). Physics; first year.		
Holbrook, Alice Marion,	Sutton, Mass.,	[Moorestown, N. J.]
A. B. (Wellesley, 1897). Physics; second year.		
Holdridge, Newton Clarke,	Hammonton, N. J.	
A. B., A. M. (Colgate, 1891, 1895). Newton Theological Institute Massachusetts, 1891-1892; Crozer Theological Seminary, 1893-1895. Superintendent of Schools, Hammonton, N. J., 1897 to date. Pedagogy, Psychology Sociology. Absent on leave.		
Holloway, Harry Vance,	New Castle, Del.,	1118 Girard St.
A. B., A. M. (Washington College, 1895, 1898). Pedagogy, Psychology, English Literature; fifth year.		
Hoyt, John Ezra,	Philadelphia,	5442 Pine St.
A. B., A. M. (Ursinus 1904; Pennsylvania, 1906). Instructor in Physics, Ursinus Academy, 1902-1904; Instructor in Mathematics and Physics and Assistant in Chemistry during 1904. Tyndale Fellow in Physics, 1905-1906. Instructor in Physics, Drexel Institute, 1906 to date. Physics; fourth year.		
Huff, Thomas Ellwood,	Philadelphia,	930 E. Chelten Ave., Germantown.
B. S. (Pennsylvania, 1907). Assistant in Chemistry, University of Pennsylvania, 1908. Chemistry; first year.		
Hunsicker, John Rudolph,	Downingtown.	
B. S., A. M. (Pennsylvania, 1905, 1907). History, Pedagogy. Absent on leave.		
Hutchin, Elizabeth Ferguson, Philadelphia,	3433 N. 21st St.	
A. B. (Bryn Mawr, 1901). Graduate student, Bryn Mawr, 1902-1903, 1904-1905. Instructor in Psychology, Philadelphia Normal School for Girls, 1903-1908. Chemistry; second year.		
James, Fleming, Rev.,	Philadelphia,	5608 Walnut St.
A. B., A. M., Ph. D. (Pennsylvania, 1895, 1896, 1899). Harrison Scholar in Classics, 1896-1897; Fellow, 1897-1899. Enters to pursue certain special work.		

Name.	Residence.	City Address.
Jaquette, Henrietta Gibbon Stratton,	Salem, N. J.	
Ph. B., A. B., A. M. (Morrisville College, 1901; Michigan, 1904; Pennsylvania, 1906. Professor of History, Western College for Women, Oxford, Ohio, 1906-1907. Sociology; third year.		
Johnson, Ralph Linwood,	Llanerch.	
A. B., A. M. (Ursinus, 1897, 1899). Instructor, Ursinus, 1899-1901. Superintendent of Schools, Upper Darby. Pedagogy, Psychology; third year.		
Jones, Charles Harris, Rev.,	Philadelphia,	2217 Frankford Ave.
A. B. (New York University, 1888). Student, Union Theological Seminary, 1882-1885. Sociology, Ethics; first year.		
Kaba, Masatada,	Tokyo, Japan,	[Ridley Park, Pa.]
Graduate of Doninsha College, Tokyo, Japan, 1881. Professor of Mathematics, Government Military Academy, Tokyo, 1894-1900; Woman's College, Tokyo, 1906 to date. Mathematics; first year.		
Kaufmann, John Warren,	Philadelphia,	4120 Parkside Ave.
A. B. (Lebanon Valley College, 1906). Sociology, Psychology; first year.		
Keasey, Miles Abdel,	Philadelphia,	3451 Chestnut St..
A. B. (Ursinus, 1906). Mathematics; third year.		
Keeler, James Franklin,	Philadelphia,	934 N. St. Bernard St.
B. S. (Mount Union College, 1905). Psychology; first year.		
Keller, Anna Mary,	Philadelphia,	1854 N. 13th St.
B. S., A. B. (Lebanon Valley College, 1897, 1904). Philosophy, Ethics; second year.		
Kent, Roland Grubb,	Philadelphia,	204 St. Mark's Sq.
A. B., B. L., A. M., Ph. D. (Swarthmore, 1895, 1896, 1898; Pennsylvania, 1903). Student, Universities of Berlin and Munich and at Athens, Greece, 1899 to January, 1902. Harrison Fellow in Classical Languages, 1902-1903; Harrison Fellow for Research, 1903-1904. Instructor in Greek and Latin, Pennsylvania, 1904 to date. Enters to pursue certain special work.		
Kilgore, Carrie Burnham,	Swarthmore.	
A. B., A. M. (Swarthmore, 1903, 1904). University Scholar in American History, 1904-1906. Modern European History, Political Science; fifth year.		
Kinsley, Mary Anderson,	Melrose Park,	5916 Master St.
A. B. (Bryn Mawr, 1908). Latin, English Literature; first year.		
Knoll, Lloyd Monroe,	Reading,	3345 Woodland Ave.
A. B., A. M. (Ursinus, 1901, 1906). Graduate of Ursinus School of Theology, 1904. Instructor in Physics, Ursinus Academy, 1899-1900. University Scholar in Physics, 1905-1907. Harrison Scholar in Physics, 1907-1908. Physics, Mathematics; fifth year.		
Kranz, James Philip,	Minneapolis, Minn.,	1506 Arch St.
A. B. (Minnesota, 1904). Graduate student, Columbia University, 1907-1908. Economics, Psychology; first year.		
Krechmer, Elisabeth,	Kowna, Russia,	114 S. 2d St.
Graduate of the Royal Gymnasium for Women, Kovenskia Russia. Romanics, Germanics; second year.		

Name.	Residence.	City Address.
Kresge, Elijah Everett, Rev., Allentown.		
A. B. (Franklin and Marshall, 1898). Student, Theological Seminary of the Reformed Church, 1899-1901. Teacher of Psychology, Woman's College, Allentown, Pa., 1902 to date. Philosophy, Ethics; first year.		
Kuntz, Franklin Samuel,	Philadelphia,	2122 N. Park Ave.
A. B., A. M. (Muhlenberg, 1900, 1903). Student, Lutheran Theological Seminary, Mt. Airy, 1900-1902. Sociology and Economics; second year.		
Lambert, Walter Davis,	W. New Brighton, [Lansdowne.]	
N. Y.,		
A. B., A. M. (Harvard, 1900, 1901). Instructor in Mathematics, Purdue University, 1901-1902. Instructor in Mathematics, University of Maine, 1902-1904. United States Coast and Geodetic Survey, 1904-1907. Harrison Fellow in Mathematics, 1907-1908. Instructor in Mathematics, University of Pennsylvania, 1908. Mathematics; second year.		
Land, George Albright,	Norristown,	604 DeKalb St.
A. B. (Franklin and Marshall, 1905). Held Half University Scholarship in Classics, 1907-1908. Latin, Greek, English; second year.		
Laury, Preston,	Perkasie.	
A. B., A. M., S. T. B. (Muhlenberg, 1889, 1892; Lutheran Theological Seminary, Chicago, 1898). Student, Lutheran Theological Seminary, Mt. Airy, 1889-1892; ibid., Chicago, Ill., 1894-1898. Ethics; first year.		
Lay, John Tracy,	Philadelphia,	4015 Pine St.
B. S. (Pennsylvania, 1907). Physics, Chemistry, Mathematics; second year.		
Lee, Mary Sarah,	Philadelphia,	1828 S. 22d St.
A. B. (Bryn Mawr, 1906). Teacher of English, Philadelphia High School for Girls, 1906 to date. Philosophy; first year.		
Leech, Ethel Stirling,	Lansdowne,	[108 Powelton Ave.]
A. B. (Mt. Holyoke College, 1901). Sociology; first year.		
Lefferts, Walter,	Philadelphia,	613 N. 18th St.
B. S. (Temple College, 1905). American History and Economics; fourth year.		
Lepper, Minerva Augusta,	Philadelphia,	2516 Montgomery Ave.
A. B. (Bryn Mawr, 1906). Latin, English; second year.		
LeVan, John Nathan, Rev., North Wales.		
A. B. (Franklin and Marshall, 1904). Student, Reformed Theological Seminary, Lancaster, Pa., 1904-1907. Sociology; first year.		
Levi, Gershon Benedict,	Chicago, Ill.,	[Vincennes Hotel, 36th St. and Vincennes Ave.]
A. B. (Pennsylvania, 1899). University Scholar in Semitics, 1899-1902. Hebrew, Assyrian, Philosophy. Absent on leave.		
Long, Bayard Henry,	Ashbourne.	
B. S. (Pennsylvania, 1908). Philosophy, Archaeology, Semitics; first year.		
Long, William Downey,	Philadelphia,	3133 Diamond St.
A. B. (Pennsylvania, 1908). Economics; first year.		

Name.	Residence.	City Address.
Long, William John,	Philadelphia,	2254 N. 18th St.
B. S. (Pennsylvania, 1905). Professor of Romance Languages and Literature, Central High School, 1903 to date. Romanics, Germanics. Absent on leave.		
Lüken, Otto,	Oldenburg, Germany,	1607 Arch St.
Graduate, Gymnasium at Oldenburg, 1906. Student, University of Breslau, Germany, 1907-1908. Sociology; first year.		
Lukens, Hiram Stanhope,	Philadelphia,	2111 Tioga St.
B. S. (Pennsylvania, 1907). Instructor in Chemistry, University of Pennsylvania, 1907 to date. Chemistry; second year.		
McAdam, Dunlap Jamison, Jr.,	Washington,	[Leonard Hall, South Bethlehem, Pa.]
A. B., A. M., M. S. (Washington and Jefferson, 1897, 1900; Pennsylvania, 1906). Instructor in Chemistry and Mineralogy, Washington and Jefferson College, 1903-1905. Instructor in Chemistry, Pennsylvania, 1905-1907; ibid. Lehigh, 1908. Chemistry. Absent on leave.		
McCartney, Eugene Stock,	Chester,	College Hall.
A. B. (Pennsylvania, 1906). Assistant in Classics, University of Pennsylvania, 1906 to date. Classics; second year.		
McClelland, George William,	Dobbs Ferry, N. Y.	[College of the City of New York, N. Y.]
A. B. (Pennsylvania, 1903). English Literature, English Philology. Latin. Absent on leave.		
McClintock, James,	Philadelphia,	5000 Woodland Ave.
A. B., B. D. (Syracuse, 1906; Drew Theological Seminary, 1908). Student, Philadelphia Divinity School. Sociology, Ethics, Anthropology; first year.		
MacDowell, Theodore Leander,	Philadelphia,	2125 Uber St.
B. S. (Columbia, 1908). Pedagogy, Sociology; first year.		
McGinnis, Claude Stonecliffe,	Greenville, Ill.,	3332 Walnut St.
B. S. (Massachusetts Institute of Technology, 1906). Assistant in Physics, Massachusetts Institute of Technology, 1906-1908. Instructor, University of Pennsylvania, 1908. Physics; first year.		
McVey, Joseph Miller,	Leslie, Md.,	1902 N. 17th St.
A. B. (Delaware College, 1904). Instructor in English, Temple College, 1904 to date. Mathematics; second year.		
Mackenzie, Donald,	Boston, Mass.,	210 S. 36th St.
A. B., A. M. (Boston University, 1901, 1902). Instructor in Classics, Central High School, San Juan, Porto Rico, 1902-1905. Student, L'Université de Paris, L'Ecole des Hautes Etudes, and the University of Madrid, Spain, 1905 to January 1907. Instructor in French, University of Pennsylvania, 1907 to date. Romanics; second year.		
Mackenzie, Marion,	Philadelphia,	4816 Florence Ave.
B. S. (Pennsylvania, 1905). University Scholar in Botany and Zoology, 1907-1908. Botany, Zoology, Pedagogy; fourth year.		
Mann, Euphemia Mary,	Philadelphia,	2009 Mt. Vernon St.
A. B. (Bryn Mawr, 1897). Teacher of Latin, English and German, York Collegiate Institute, York, Pa., 1897-1899. Teacher in Latin and Greek, High School, Camden, N. J., 1899-1902; ibid., High School for Girls, Philadelphia, 1902 to date. Latin; first year.		

Name.	Residence.	City Address.
Manning, Arthur Clarence,	Smyrna, Ga.,	Wissinoming Hall, Mt. Airy.
A. B., A. M. (Emory, 1902; Gallaudet, 1904). Teacher, Pennsylvania Institution for the Deaf, 1905 to date. American History; second year.		
Marcus, Bertha,	Philadelphia,	1942 N. 19th St.
A. B. (Bryn Mawr, 1905). Germanics; first year.		
Margolis, Evelyn Kate Aronson,	Philadelphia,	3228 Montgomery Ave.
B. L. (California, 1900). Fine Arts, Philosophy; first year.		
Martin, Allen S.,	Norristown.	
B. S. (Pennsylvania, 1905). Superintendent of Schools, Norristown, Pa. English Literature; first year.		
Meiji, Tsunezo,	Osaka, Japan,	4731 Hazel Ave.
Graduate of The Osaka Higher Commercial School, Osaka, Japan, 1903. Student, New York University and University of Pennsylvania, 1907-1908. Instructor, Assistant Professor, Professor, Osaka Higher Commercial School, Osaka, Japan, 1904 to date. Transportation and Commerce, Economics; first year.		
Melvin, Frank Worthington, Philadelphia,		3125 Montgomery Ave.
B. S. (Pennsylvania, 1908). Instructor in English, Southern Manual Training High School, Philadelphia, 1908. Sociology, Economics; first year.		
Mendenhall, John Cooper, Philadelphia,		4734 Penn St., Fkd.
A. B. (Pennsylvania, 1907). University Scholar in English, 1907-1908. Assistant in English, Pennsylvania, 1908. English Literature, English Philology, Latin; second year.		
Merrell, Caroline Wallace, Philadelphia,		2950 Frankford Ave.
A. B. (Cornell, 1902). Philosophy; second year.		
Messick, Charles Polk, Georgetown, Del.,		[14 Southard St., Trenton, N. J.]
A. B. (Delaware College, 1907). Teacher of History, Trenton High School, 1908. English History, Sociology; first year		
Miller, Anna Bertha, West Chester,		[38 S. High St.]
A. B. (Woman's College, Baltimore, 1894). Latin; third year.		
Morden, Gilbert Walworth, Picton, Ontario,		University of Toronto, Toronto, Canada.
A. B., A. M. (Queen's University, 1888, 1905). Graduate Student, Harvard Summer School, 1906. Special Harrison Scholar in Chemistry, 1905-1907. Student at Karlsruhe Technische Hochschule, Baden, Germany, 1907-1908, where he received "Diplomirter Chemiker," 1908. Chemistry. Absent on leave.		
Moxey, Edward Preston, Jr., Philadelphia,		512 King St., Gtn.
B. S. (Pennsylvania, 1904). Assistant in Accounting, University of Pennsylvania, 1904-1907; Instructor, 1907 to date. Economics; fourth year.		
Moyer, Herbert Baldwin, Cape May, N. J.,		[124 Decatur St.]
A. B., A. M. (Bucknell, 1897, 1898). Student, Courses for Teachers, Pennsylvania, 1898-1900. University Scholar in Psychology, 1904-1906. Pedagogy, Psychology, Latin. Absent on leave.		

Name.	Residence.	City Address.
Mueller, George Joseph,	Lancaster,	7301 Germantown Ave.
A. B. (Muhlenberg, 1906). Teacher, High School, Lancaster, Pa., 1906-1907. Student, Lutheran Theological Seminary, Mt. Airy, 1907 to date. Psychology; first year.		
Müller, John Hughes,	Swarthmore.	
B. S. (Pennsylvania, 1908). Chemistry; first year.		
Murphy, William Robert,	Philadelphia,	223 S. 37th St.
B. S. (Pennsylvania, 1906). English Literature, English Philology, Latin. Absent on leave first term.		
Myers, Abram Linford,	Perkasie,	117 S. 38th St.
A. B., A. M. (Lafayette, 1902; Pennsylvania, 1906). Latin; fifth year.		
Myers, Albert Cook,	Moylan.	
B. L., M. L. (Swarthmore, 1898, 1901). Graduate student, Swarthmore, 1898-1901; Pennsylvania, 1901-1903; Wisconsin, October, 1903-February, 1904; Harvard, February-June, 1904. American History, American Constitutional History, European History. Absent on leave.		
Nathan, Marvin,	Philadelphia,	2213 N. Natrona St.
A. B. (Cornell, 1900). Student, Columbia University, 1901-1904. Philosophy, Sociology, Semitics; first year.		
Nearing, Scott,	Philadelphia,	Logan Hall.
B. S. (Pennsylvania, 1905). Instructor in Economics, Pennsylvania, 1905 to date. Economics; fourth year.		
Nelson, John, Rev.,	Philadelphia,	3914 Pine St.
A. B., B. D. (Grove City, 1899; Princeton Theological Seminary, 1905). Sociology, Semitics; third year.		
Niblo, Caroline Elizabeth	Conshohocken,	[219 E. 6th Ave.]
Louden,		
B. S. (Temple College, 1908). Pedagogy, American History, English Literature; third year.		
Nicolay, Clara Leonora,	Philadelphia,	3956 Pine St.
L. L. A., A. M., Ph. D. (University of Saint Andrews, Scotland, 1898; Pennsylvania, 1901, 1907). Student, Victoria Lyceum, Berlin, Germany, 1882-1885; University College, Nottingham, England, 1889-1897. Student, University Correspondence College, Cambridge, England, 1894-1896. Reader in French, Bryn Mawr College, 1907. Enters to pursue certain special work.		
O'Shaughnessy, Louis,	Blacksburg, Va.,	3435 Chestnut St.
B. S., C. E., A. M. (Virginia Polytechnic, 1903, 1904; Ohio State University, 1907). Instructor in Civil Engineering, Virginia Polytechnic Institute, 1904-1906. Instructor in Mathematics, University of Pennsylvania, 1907 to date. Mathematics, Astronomy; second year.		
Osmond, Eloise Livermore,	Camden, N. J.,	[601 N. 2d St.]
A. B. (Cornell, 1895). Teacher, Camden High School, 1905 to date. Latin; first year.		
Oswald, Osville Johnson,	Trenton, N. J.,	[229 S. Clinton Ave.]
Ph. B., M. S. (Lafayette, 1900, 1903). Student, University of Leipzig, 1904-1905. Teacher of Modern Languages, Bordentown Military Institute, Bordentown, N. J., 1905-1906. Teacher of German, Brooklyn Polytechnic Institute, 1906-1907; Trenton High School, Trenton, N. J., 1907 to date. Germanics; first year.		

Name.	Residence.	City Address.
Pearce, Gertrude, A. B. (Wellesley, 1899).	Cazenovia, N. Y., English Literature; second year.	1720 Arch St.
Perkins, Frances, A. B. (Mt. Holyoke College, 1902).	Worcester, Mass., Sociology, Economics; first year.	622 Locust St.
Phillips, Byron Armbruster, B. S. (Temple, 1908).	Philadelphia, Psychology, Pedagogy; first year.	915 N. 11th St.
Phillips, Jesse Carey, A. B. (Dickinson, 1906).	Philadelphia, European History, American History, English Literature; third year.	1166 S. Broad St.
Plummer, George William, B. S. (Pennsylvania, 1907).	Philadelphia, Chemistry; second year.	1301 W. Susquehanna Ave.
Randels, George Basil, Ph. B. (Alma College, 1900).	West Unity, Ohio, 1902-1905; Alma College, 1905-1906. Student, University of Jena, 1906-1907. Harrison Fellow in Pedagogy, 1907-1908.	410 N. 41st St. Pedagogy, Psychology, Philosophy; Absent on leave.
Renninger, Warren Daub, A. B., A. M. (Columbia, 1901; Pennsylvania, 1906).	Philadelphia, Instructor in History, Central High School, Philadelphia, 1904 to date.	279 S. 57th St. Graduate student, University of Chicago, 1904. Instructor in History, Perkiomen Seminary, 1901-1904. American History; fifth year.
Richardson, Alice Mabel, A. B. (Boston University, 1903).	Boston, Mass., Teacher, William Penn Charter School.	2045 Arch St. English; second year.
Ridgley, Frank Harris, A. M. (Washington and Jefferson, 1900, 1905).	Lincoln University.	
Rissmiller, Isaac, A. B. (Lebanon Valley College, 1906).	Delanco, N. J.	Professor of Hebrew and Old Testament Exegesis, Lincoln University, 1906 to date. Student, University of Leipzig, Germany. Summer Semester, 1908. Semitics, Archaeology, Philosophy; first year.
Rivas, Damaso, M. D., M. D., B. S. (Medico-Chirurgical, 1898; Graz, Austria, 1902; Pennsylvania, 1908).	Philadelphia, Botany, Zoology, Philosophy; first year.	S. E. Cor. 62d and Vine Streets.
Roberts, George Simpson, A. B. (Swarthmore, 1906).	Philadelphia, Chemistry; first year.	3402 Sansom St. Graduate student, Swarthmore, 1907-1908.
Rothermel, Florence, A. B. (Dickinson, 1902).	Fleetwood, Teacher, Camden High School, 1907 to date.	[319 N. 5th St., Camden, N. J.] Pedagogy; second year.
Rowland, Albert Lindsay, A. B. (Temple, 1908).	Philadelphia, Sociology, European History; first year.	2347 Oxford St.

## GRADUATE SCHOOL.

Name.	Residence.	City Address.
Rupp, Samuel Edwin,	Lebanon,	[837 Willow St.]
A. B. (Lebanon Valley College, 1901). Student, Ursinus School of Theology, 1901-1904. Sociology, Economics, Anthropology. Absent on leave.		
Savage, Henry Chauncey,	Philadelphia,	1223 Walnut St.
A. B. (Yale 1879). Mineralogy. Absent on leave.		
Schenck, Archibald Clarence, North Wales.		
A. B. (Muhlenberg, 1900). English Literature; first year.		
Schumacher, Adolf,	Winthrop, Mass.,	731 N. 40th St.
Graduate, Royal Gymnasium, Göttingen, Germany, 1884. Student, University of Göttingen and Leipzig, Germany, 1884-1889. Professor of Modern Languages, Ursinus College, 1906-1908. Instructor in German, University of Pennsylvania, 1908. Germanics, German Philology Romanics; first year.		
Seiler, C. Linn,	Philadelphia,	414 S. 15th St.
B. S., A. M. (Haverford, 1902). Instructor in Mathematics, Haverford, 1903-1907. Instructor in Economics, Pennsylvania, 1907 to date. Economics, Sociology; third year.		
Sheetz, George Christian,	Philadelphia,	1553 E. Palmer St.
B. S. (Pennsylvania, 1899). Professor of Mathematics and History, North East Manual Training High School, Philadelphia. American History; third year.		
Shriver, Helen Brooks,	Trenton, N. J.	
A. B. (Woman's College, Baltimore, 1905). Teaching, High School, Trenton, N. J. Biology, Sociology; first year.		
Shugert, Stanley Pulliam,	Charles Town, W. Va.	3342 Lancaster Ave.
A. B. (Roanoke, 1903). Harrison Scholar, 1906-1907. University Scholar 1907-1908. Mathematics, Astronomy; third year.		
Simmons, Hezzleton,	Leroy, Ohio,	4903 Arch St.
B. S. (Buchtel, 1908). Chemistry; first year.		
Sladen, Charles Fisher,	Philadelphia,	3209 Sansom St.
B. S., A. M. (Pennsylvania, 1901, 1902). Germanics; fifth year.		
Smith, Hamilton Ross,	Media,	2030 Arch St. *
A. B. (Lafayette College, 1906). Teacher of Mathematics, High School, Camden, N. J., 1906-1907; Pennsylvania State College, 1907 to February, 1908; Southern Manual Training High School, Philadelphia, February, 1908 to date. Sociology, Pedagogy; first year.		
Smith, Henry Bradford,	Philadelphia.	
A. B. (Pennsylvania, 1903). Harrison Scholar in Philosophy, 1903-1904; 1905-1906. Instructor in Mathematics, Tufts College, 1904-1905. Student, Harvard University, 1904-1905. Summer Semester, Heidelberg, 1905; Munich, 1906. Philosophy, Physics, Mathematics. Absent on leave.		
Smith, Roy Clark,	West Chester.	
A. B. (Western Maryland College, 1906). Principal, High School, Preston, Maryland, 1906-1907. Head of Department of Mathematics, High School, West Chester, Pa., 1908. Pedagogy, Psychology; first year.		
Smith, Stevenson,	Philadelphia,	[Hampden-Sidney, Va.]
A. B. (Pennsylvania, 1904). Graduate student, Summer Semester, Heidelberg, June to August, 1905. Assistant in Psychology, Columbia University, 1905-1906. Professor of Philosophy, Hampden-Sidney College, 1906 to date. Psychology, Zoology, Philosophy. Absent on leave.		

Name.	Residence.	City Address.
Smyth, Arthur Monet,	Philadelphia,	411 High St., Gtn. B. S., E. M. (Lehigh University, 1889, 1890). Chemistry, Mineralogy, Geology; second year.
Snyder, Joseph Leasure Kline, Salina,		207 S. 37th St. A. B. (Franklin and Marshall, 1906). Post-graduate work in Chemistry, Franklin and Marshall, 1906-1907. Chemistry; second year.
South, George Washington, Berwyn. Jr.,		A. B. (Harvard, 1903). Psychology, Philosophy; second year.
Sparhawk-Jones, Margaret,	Philadelphia,	1814 Pine St. A. B. (Bryn Mawr, 1908). European History, Romanics, Sociology; first year.
Speaker, Henry Magid, Rev., Wisoko, Russia,	2257 N. Camac St.	University Scholar in Pedagogy, 1898-1899. President, Gratz College, Philadelphia. Semitics, Philosophy; second year.
Spencer, Pauline Wolcott,	Philadelphia,	3421 Race St. A. B. (Pennsylvania, 1908). Teacher of History and Pedagogy, Philadelphia Normal School for Girls. Latin; first year.
Staples, Clarence Leonard,	Portland, Me.,	[530 Linden St., Camden, N. J.] A. B., A. M. (Harvard, 1905; Pennsylvania, 1908). Pedagogy, Psychology; third year.
Starkey, Foster Henry,	West Chester.	A. B., A. B., A. M. (Bucknell, 1891; Harvard, 1892; Bucknell, 1894). Latin; second year.
Stauffer, John Barr,	Millersville,	419 Edgewood St. A. B. (Franklin and Marshall, 1890). Mathematics, Pedagogy, Psychology; second year.
Steward, Harold Dean,	Lansdale.	A. B. (Ursinus College, 1907). Teacher of Mathematics and History, High School, Lansdale, Pa., 1907 to date. Latin, English, Pedagogy; first year.
Stirling, Sarah Hall.	Philadelphia,	1931 E. Cumberland St. A. B., A. M. (Swarthmore, 1884, 1906). Germanics; third year.
String, William Paxson,	Philadelphia,	2436 N. 30th St. A. B., A. M. (Dickinson, 1891, 1896). American History, European History; third year.
Strong, Clinton Aaron,	East Hampton, Mass.,	5022 Cedar Ave. B. S., A. M. (Amherst, 1898, 1901). Head of Department of English and Public Speaking, Williston Seminary, East Hampton, Mass., 1898-1902; ibid., High School, Salem, Mass., 1902-1903; ibid., Penn Charter School, Philadelphia, 1903 to date. University Scholar in English, second term, 1906-1907; ibid., full year, 1907-1908. English Literature, English Philology, Sociology; fourth year.
Stuckert, Howard Morris,	Philadelphia,	5000 Woodland Ave. A. B. (Pennsylvania, 1907). Student, Philadelphia Divinity School. Assistant in History, University of Pennsylvania, 1908. European History, Ethics; first year.

Name.	Residence.	City Address.
Takagi, Riukichi,	Nagoya, Aichi, Japan,	3715 Locust St.
B. S. (Waseda University, Tokyo, Japan, 1907). Transportation and Commerce; Economics; first year.		
Taylor, Charles Keen,	Philadelphia,	5321 Wayne Ave., Gtn.
B. S. (Pennsylvania, 1903). Teacher of History, Germantown Academy, 1907 to date. Psychology; first year.		
Thomas, Lillian Adah,	Woodbury, N. J.,	[118 Holroyd Place.]
A. B. (Wellealey, 1897). English Literature; second year.		
Thompson, Clara Louise,	St. Louis, Mo.	
A. B., A. M. (Washington University, 1906; Pennsylvania, 1907). Pepper Fellow, 1906-1908. Fellow at American School of Classical Studies, Rome, 1908. Latin, Greek, Philology. Absent on leave, studying at Rome.		
Tolbert, Gertrude M.,	Philadelphia,	2220 N. 20th St.
A. B. (Temple, 1908). Teacher of English, Temple University, 1908. English Philology; first year.		
Tomkinson, Samuel,	Philadelphia,	2230 Estaugh St.
B. S. (Temple, 1908). Economics; first year.		
Town, Clara Harrison,	Philadelphia,	Friends' Asylum, Fkd.
B. S. (Temple, 1907). Assistant in the Psychological Clinic, University of Pennsylvania, March to September, 1907. Psychology, Sociology; second year.		
Ulrich, Elmer Bixler,	Jonestown,	614 N. 43d St.
B. S. (Muhlenberg, 1907). Harrison Scholar in Botany and Zoology, 1907-1908. Reappointed for, 1908-1909, but resigned. Botany; second year.		
Ungemach, Dena D.,	Philadelphia,	2548 N. Douglas St.
B. S. (Pennsylvania, 1908). Physics, Zoology; first year.		
Urich, Frank Mock,	Quakertown.	
A. B., A. M. (Muhlenberg, 1902, 1905). Student, Lutheran Theological Seminary, Mt. Airy, 1902-1905. English Literature; first year.		
Van Haagen, Walter Kurt,	Philadelphia,	749 N. 40th St.
B. S. (Pennsylvania, 1905). Harrison Scholar in Chemistry 1905-1906. Assistant in Chemistry, University of Pennsylvania, 1907; Instructor, Lehigh, 1908. Chemistry, Mineralogy. Absent on leave.		
Van Ormer, Abraham Brower,	Norwood.	
Bunn,		
Pd. D., A. B., B. D. (New York University, 1894; Gettysburg, 1898, Gettysburg Theological Seminary, 1901). University Scholar, 1906-1907. Held Half University Scholarship, 1907-1908. Ethics, Psychology, Sociology; fourth year.		
Victory, Beatrice Marguerite,	Philadelphia,	4845 Cedar Ave.
A. B., A. M. (Swarthmore, 1907, 1908). Germanics, English Literature; first year.		
Wagenseller, Benjamin Meade,	Selinsgrove,	711 N. 40th St.
A. B., A. M. (Bucknell, 1895; Pennsylvania, 1902). Partial student in Chemistry, 1900-1901; Assistant in Chemistry, Pennsylvania, 1902-1904. Chemistry, Mineralogy. Absent on leave.		

## STUDENTS.

707

Name.	Residence.	City Address.
Waldie, Alma Tiedemann,	Philadelphia,	46 E. Washington Lane, Gtn.
A. B. (Cornell, 1908). Physics, Mathematics; first year.		
Wallace, Bertrand Holmes,	Swarthmore.	
A. B. (Rochester, 1901). Germanics; fourth year.		
Wallace, James McGill, Rev., Philadelphia,	1315 S. 58th St.	
A. B. (New Windsor College, 1895). Semitics; first year.		
Warfield, John Ogle, Rev., Philadelphia,	Chestnut Hill.	
A. B., B. D. (Johns Hopkins, 1893; Episcopal Theological School, Cambridge, Mass., 1896). Anthropology, Semitics; first year.		
Watson, Frank Dekker,	Milbourne,	Logan Hall.
B. S. (Pennsylvania, 1905). University Scholar in Sociology, 1905-1906. Economics, Sociology; fourth year.		
White, William Harry Haz- zard,	Chester,	[506 W. 9th St.]
A. B. (Harvard, 1905). Teacher of Classics, High School, Wilmington, Delaware, 1905-1907. Teacher of English, Wenonah Military Academy, Wenonah, N. J., High School, Chester, Pa., 1908. Latin; first year.		
White, Winton John,	Columbia,	[Englewood, N. J.]
A. B., A. M. (Pennsylvania, 1904, 1905). University Scholar in Classics, 1904-1905. Philosophy, Pedagogy, Classical Languages. Absent on leave.		
Whitson, Walter Wilkin,	Haverford.	
A. B. (Haverford, 1908). Sociology; second year.		
Wilcox, Mary Anna,	Merion.	
Ph. B., A. M. (Dickinson College, 1896, 1897). Teacher, Philadelphia High School for Girls, 1904 to date. Latin; first year.		
Wildman, Edward Embree,	Philadelphia,	1804 Green St.
B. S., M. S. (Pennsylvania, 1904, 1908). Instructor in Biology, Central High School, Philadelphia, 1907-1908; Professor, 1908 to date. Zoology; fifth year.		
Wise, Milton Bigler,	Philadelphia,	1605 W. Lehigh Ave.
A. B., A. M. (Pennsylvania, 1899, 1900). Harrison Scholar in European History, 1899-1900; University Scholar, 1900-1901. Fellow and Assistant in European History, Syracuse, 1901-1902. Instructor, Central High School, Philadelphia, 1904-1907; Assistant Professor of History, ibid., 1908 to date. American History; seventh year.		
Wright, Richard Robert,Jr.,	Savannah, Ga.,	922 Locust St.
A. B., B. D., A. M. (Georgia State College, 1898; Chicago, 1901, 1904). Instructor, Wilberforce University, Ohio, 1901-1903. University Fellow in Sociology, 1905-1906. Special University Fellow in Sociology, 1906-1907. Sociology, Economics, European History. Absent on leave.		
Wykes, Thomas Edward,Jr.,	Grand Rapids, Mich., Dorm. 201 Brooks.	
B. S. (Pennsylvania, 1908). Assistant in Economics, University of Pennsylvania, 1908. Economics, Transportation and Commerce, Finance; second year.		
Young,Clarence Andrew,Rev.,Philadelphia,	2008 N. Marshall St.	
A. B., A. M. (Pennsylvania, 1901,1908). University Scholar in Sociology, 1901-1902. Held Half University Scholarship, 1907-1908. Sociology, Anthropology, Economics; fourth year.		

Name.	Residence.	City Address.
Young, Walter Jorgensen,	Chester,	[Crozer Theological Seminary, West Chester.]

A. B. (Richmond, 1907). Student, Crozer Theological Seminary, 1907 to date.  
Sociology, Psychology; second year.

#### AUDITORS.

Barnes, Harold Edgar,	Philadelphia,	"The Covington," 37th and Chestnut Sts.
LL. B. (Pennsylvania, 1906). Instructor in Business Law, University of Pennsylvania, 1908. Finance; first year.		
Barnhurst, Mary Virginia,	Germantown,	239 Winona Ave., Gtn.
Sociology, Semitics.		
Benn, James Steele,	Philadelphia,	5001 Hazel Ave.
Hebrew Archaeology.		
Breidenbach, H. Leon,	Boyertown.	
Pedagogy.		
Brinton, Anne Garrison,	Bryn Mawr.	
Romanics.		
Brown, Harold Stacy,	Hudson, Mass.,	Dorm. 31 Bodine.
Transportation and Commerce, Economics, Political Science.		
Cramp, Laura Grace,	Philadelphia,	1816 Tioga St.
Sociology.		
Farrington, Ernest Albert,	Haddonfield, N. J.	
B.S., M. D. (Bryn Athyn, 1898; Dunham Medical College, 1902). Demonstrator in Psychological Laboratory, Hahnemann Medical College, 1906-1907. Lecturer in Psychology, ibid., 1907. Philosophy; second year.		
Fugette, Inda Warder,	Shelbyville, Tenn.,	Cowler Inn, Gtn.
Fine Arts.		
Gift, Foster U., Rev.,	Philadelphia,	4221 Otter St.
Hebrew Archaeology.		
Goward, Sadie,	Philadelphia,	1616 N. Marshall St.
Sociology.		
Harper, Olive Alexine,	Philadelphia,	2235 N. 17th St.
Sociology.		
Jansen, Waldemar, Rev.,	Philadelphia,	2430 W. Lehigh Ave.
B. D. (Philadelphia Divinity School, 1903). Philosophy.		
Kayser, Louis Napoleon,	Joplin, Mo.,	[Crozer Theological Seminary, West Chester.]
B. P. (Findlay College, 1907). Sociology.		
Kern, Robert Alexander,	Knoxville, Tenn.,	Dorm. 13 Bodine.
Psychology, Economics, Sociology.		

Name.	Residence.	City Address.
Kline, Frank Bell, History.	Philadelphia,	4937 Larchwood Ave.
Kutchinsky, Esther, Romanics, Germanics, Pedagogy.	Grodno, Russia,	501 Pine St.
Landié, Stanislaw Leoncjusz, Warsaw, Poland, Sociology, Economics, Romanics.		Dorm. 16 Morris.
Lapatnikoff, Charlotte, Germanics.	Reval, Russia,	3116 Clifford St.
McKay, Betsey, Psychology.	Philadelphia,	1502 N. 18th St.
Maier, Julia Marie, Sociology.	Royersford.	
Minnig, Frank Raymond, Pedagogy.	Philadelphia,	5210 Webster St.
Newbold, Ethel Packard, Fine Arts.	Philadelphia,	236 S. 44th St.
O'Neill, Cornelius Jannes, Rev., Latin, English Literature, Fine Arts.	Philadelphia,	3813 Spring Garden St.
Prichard, Margaret Sawyer, Philadelphia, Sociology.		128 W. Washington Lane, Gtn.
Prichard, Mary Frothingham, Philadelphia, European History.		128 W. Washington Lane, Gtn.
Robinson, Louis Barclay, Philadelphia,		6342 Drexel Road, Overbrook.
LL. B. (Pennsylvania, 1898). English History, American History.		
Seidmann, Sara, Romanics, Germanics, Pedagogy.	Kishineff, Russia,	1431 N. Franklin St.
South, Florence Tingley, Germanics, Psychology.	Berwyn.	
Steen, John Dee, Germanics.	South Vineland, N.J., Dorm.	453 N.Y. Alumni.
Strayhorn, Andrew Magill, Rev., Philosophy, Ethics, Semitics.	Kennett Square,	1018 Arch St.
Struve, Marcus, B. S. in Pharmacy (Oregon Agricultural College, 1908).	Pendleton, Ore., Chemistry.	210 S. 37th St.
Taylor, Charles Carter, English Literature, Economics, Sociology.	Philadelphia,	4105 Walnut St.

## GRADUATE SCHOOL.

Name.	Residence.	City Address.
Tietz, Elise Emilie Marie, Germanics.	Philadelphia,	1442 N. 12th St.
Walter, Cornelius Jacob, Economics.	Philadelphia,	6610 Woodland Ave.
Wodo, Toyo Ihachi, Mathematics, Astronomy.	Miyoshi, Bingo, Japan,	5401 Delancey St.

## SUMMARY.

Research Fellows.....	8
Regular Students.....	309
Auditors.....	36
Total.....	353*

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\*Of this number, two regular students and nine auditors are registered elsewhere; two in Law, and nine in College.

## DEPARTMENT OF LAW.

### GRADUATE STUDENTS.

Name.	Residence.	City Address.
Aguilar, L. Humberto, B. S. A. B. (Nicaragua),	Leon, Nicaragua, C.	1202 Green St.
Hartpence, John Armitage, LL. B. (Pennsylvania),	A.	
Reeder, Robert Patterson, LL. B. (Pennsylvania),	Trenton, N. J.,	[1105 N. Olden Ave.]
Williams, J. Henry,	Philadelphia,	333 N. Wilton St.
Yang, Yai Hang, LL. B. (Waseda, Japan),	do.	The Bartram.
	Wusieh, China,	3443 Walnut St.

### THIRD-YEAR CLASS.

Abrams, Joseph Addison, B. S. (Pennsylvania),	Philadelphia,	23 S. 34th St.
Aertsen, Jr., Guilliaem, A. B. (Harvard),	do.	The Gladstone.
Alexander, Daniel, A. B. (Utah),	Salt Lake City, Utah,	5131 De Lancey St.
Arnold, John Carlisle,	DuBois,	5008 Walton Ave.
Barrick, Jacob Louis,	Philadelphia,	670 N. 36th St.
Bell, William Francis,	Shenandoah,	3301 Walnut St.
Biddle, Edward Macfunn, A. B. (Yale),	Carlisle,	3537 Locust St.
Bryson, George Martin,	Camden, N. J.,	[610 N. 5th St.]
Cameron, Inglis Edward Donald,	Philadelphia,	1953 Stanley St.
Carey, James Thomas,	Chester,	[2124 W. 4th St.]
Carman, Ernest Clarke,	Pittsburg,	3805 Locust St.
Carmichael, Harold Ammon, A. B., A. M. (Grove City),	Sandy Lake,	40 N. 36th St.
Carpenter, Jr., James Douton,	Woodbury, N. J.	
Chang, Henry Kumphrey,	Washington, D. C.,	The Normandie.
Chrisman, Neil,	Bloomsburg,	Dorm. 217 Foerderer.
Crawford, Winfield Wilson, A. B. (Pennsylvania),	West Conshohocken,	113 S. 37th St.
Elliott, William Johnstone,	Philadelphia,	5031 Cedar Ave.
Ermentrout, Charles Benton,	Reading,	Dorm. 376 Hopkinson.
Ewing, Jr., Maskell, A. B. (Pennsylvania),	Villa Nova,	Dorm. 235 Baird.
Ford, William Bernard, B. S. (St. John's),	Carbondale,	3469 Sansom St.
Gallen, James Edward,	Philadelphia,	2423 S. 11th St.
Gill, Charles Anthony, A. B. (LaSalle),	do.	1426 Girard Ave.
Hanby, Albert Thatcher,	Carpenter, Del.,	3316 Walnut St.

Name.	Residence.	City Address.
Henderson, Howard Martain,	Philadelphia,	1428 S. Broad St.
Hindman, Jr., Charles	DuBois,	3728 Walnut St.
Crawford,		
Hutchinson, Arthur Emlen,	Philadelphia,	Aldine Hotel.
A. B. (Harvard),		
Keating, Walter Neill,	do.	1509 Belmont Ave.
Keely, Wallace Montgomery,	Norristown.	
A. B. (Lafayette),		
Kelly, William Francis	Camden, N. J..	[621 Market St.]
Aloysius,		
Keough, Joseph Aloysius,	Philadelphia,	1308 Federal St.
Lichtenberger, James Buchanan,	Harrisburg,	Dorm. 34 Morris.
A. B. (Princeton),		
Long, William Downey,	Philadelphia,	3133 Diamond St.
A. B. (Pennsylvania),		
McCann, John Jacob,	do.	651 Brooklyn St.
McConnell, Alexander,	Greensburg,	3607 Locust St.
McSorley, Richard Thomas,	Philadelphia,	1724 Moore St.
Maloney, John Fred,	Woburn, Mass.,	3306 Hamilton St.
Martin, Eugene Angelo,	Philadelphia,	890 Holly St.
A. B., A. M. (St. Joseph's),		
Matthias, Norwood Deal,	Norristown.	
B. S. (Pennsylvania),		
Miller, Warren Koons,	Haverford.	
A. B. (Haverford),		
Minnick, Jr., Thomas Joseph,	Philadelphia,	1700 Fairmount Ave.
A. B. (St. Joseph's),		
Moss, Joseph,	do.	333 South St.
Nichterlein, Theodore	do.	108 S. 42d St.
Edward,		
Orr, George Pownall,	Chester,	" University House," 26th and Lombard Streets.
Parke, Dale Howard,	Salt Lake City, Utah,	3728 Walnut St.
A. B., B. S. (Utah),		
Powell, John Franklin,	Hazleton,	Dorm. 16 Morgan.
A. B. (Trinity),		
Robey, Louis William,	Philadelphia,	3702 Locust St.
A. B. (Bucknell),		
Rooke, William John,	Shamokin,	[1308 Oneida St.]
Rynkiewicz, Zygmunt,	Shenandoah,	3301 Walnut St.
B. S. (Penna. State),		
Sauder, Isador Emanuel,	Philadelphia,	1122 W. Columbia Ave.
Schaeffer, Abraham Lincoln,	do.	508 Reed St.
Schermerhorn, Warren	Bridgewater.	3728 Walnut St.
Crocker,		
Scott, Forrester Holmes,	Philadelphia,	4041 Spruce St.
B. S. (Pennsylvania),		
Smallock, William Henry,	do.	333 N. 5th St.
Stern, Julius David,	do.	1421 N. 15th St.
A. B. (Pennsylvania),		

Name.	Residence.	City Address.
Stern, Louis Edwin, Stetser, John Joseph, A. B. (Pennsylvania),	Vineland, N. J., Chester,	Dorm. 317 Leidy. [519 Welsh St.]
Stewart, Jr., Frank Wells, A. B. (Lafayette),	Easton,	117 S. 38th St.
Strickler, Myer Samuel, Sykes, Alvin West,	Philadelphia, Hamilton Square, N. J.,	336 Gerritt St. Dorm. 328 Franklin.
Taylor, Francis Richards, A. B. (Haverford),	West Chester,	918 Stephen Girard Bldg.
Tunney, Joseph, A. B. (Haverford),	Philadelphia,	2212 Brown St.
Underhill, Carolyn Agnes A. B. (Swarthmore),	do.	1415 Filbert St.
Watkins, William Merle, A. B. (West Virginia),	Grafton, W. Va.,	Dorm. 43 Memorial.
Watson, Clifford Alexander, Wolfe, Russell Seipt, A. B. (Yale),	Bradford, Philadelphia,	3603 Locust St. 1701 Diamond St.

## SECOND-YEAR CLASS.

Anders, Monroe Heebner, A. B. (Princeton),	Fairview Village,	3429 Walnut St.
Baker, Howard Schell, Ballard, Ernest Schwefel, A. B. (Yale),	Philadelphia, do.	2119 N. 20th St. [8301 St. Martin's Lane, Chestnut Hill.]
Baur, Gustav Henry, Bell, Stanislaus Daniel, Berkowitz, Harry Myer, Bogatin, Robert Ferdinand, Braude, Henry William, Bromley, Wallace, B. S. (Pennsylvania),	Erie, Shamokin, Philadelphia, do. do. do.	Dorm. 329 Franklin. 3731 Spruce St. 638 Spruce St. 621 S. 3d St. 422 Dickinson St. [126 Sumac St., Wissahickon.]
Brundage, Wilbur Hade, Burns, Ellery LeRoy, Burtnett, Clement Leal, Byrnes, William Kennedy, Cannon, James Louis, B. S. (Pennsylvania),	Hazleton, Scranton, National Park, N. J.,	3711 Woodland Ave. 3728 Walnut St. 225 S. 53d St.
Carson, Walter, A. B. (Haverford), A. M. (Harvard),	Hazleton, Philadelphia,	3309 Walnut St. 1246 N. Front St.
Chadwick, E. Wallace, A. B. (Pennsylvania),	Camden, N. J.,	[515 N. 3d St.]
Clayton, John Wesley, Comerford, James Andrew, Conver, Samuel Dresher, A. B. (Princeton),	Chester,	611 W. 7th St.]
Dungan, Ralph Anthony, A. B. (St. Joseph's),	Philadelphia, do Lansdale, Philadelphia,	547 E. Indiana Ave. 2347 N. Woodstock St. 1242 N. 18th St.

Name.	Residence.	City Address.
Evans, Harold, A. B. (Haverford),	Philadelphia,	"Awbury," Gtn.
Fegley, Nelson Place, A. B. (Ursinus),	Lower Providence,	3420 Sansom St.
Fitz-Gerald, Frank Newbury, Philadelphia, Flomenhoft, Herman	do.	1837 N. 17th St. 1739 S. 4th St.
Gaston, Frederick Harold, B. S. (Pennsylvania),	do.	[6338 Drexel Road, Overbrook.]
Gehrett, Wilson Hann, Gibb, Thomas Baker, Ph. B. (Wesleyan Univ.),	Bristol, Oak Lane,	[201 Mulberry St.] 505 Chestnut St.
Gordon, Jr., James Gay, A. B. (Princeton),	Philadelphia,	1829 Pine St.
Gormley, Martin Brown, Groskie, Francis Leon, Hannum, Howard Edmiston, A. B. (Yale),	Hazleton, Nanticoke, Chester,	3309 Walnut St. 3440 Walnut St. [14th and Walnut Sts.]
Harbeson, William Page, B. S. (Pennsylvania),	Philadelphia,	1519 Chestnut St.
Harker, Norman Woolston, A. B. (Pennsylvania),	Mt. Holly, N. J..	3316 Walnut St.
Heisler, Roland Carlisle, Hepburn, Barry Hayes, A. B. (Pennsylvania),	Philadelphia, do.	110 S. 43d St. 1728 Pine St.
Herron, James Vincent, Hopkinson, Jr., Edward, A. B. (Pennsylvania),	Bordentown, N. J., Philadelphia,	[Post Office Box 363]. 1424 Spruce St.
Howie, Brison, A. B. (Princeton),	New York, N. Y.,	Dorm. 211 Franklin.
Hurshman, Abraham Eleazer,	Philadelphia,	753 Passyunk Ave.
Jacobs, Jr., Michael William, A. B. (Pennsylvania),	Harrisburg,	3604 Walnut St.
Jordan, James Dominic, A. B. (Notre Dame),	Scranton,	Dorm. 55 Memorial.
Kennedy, Harold Sherman, Klein, Percival Samuel Noar, Kohn, Richard Elias,	Scranton, Philadelphia,	Dorm. 26 Bodine. 608 Chestnut St.
Kratzok, Samuel Eugene, Lamberton, Robert Eneas, A. B. (Pennsylvania),	Newark, N. J., Philadelphia, do.	Dorm. 28 Morris. 413 Spruce St. 4403 Osage Ave.
Landberg, John Noah, Lazowick, Samuel Reuben,	do.	1536 N. 7th St. 1515 S. 6th St.
Leap, Sedgwick Rusling, 2d, Lewis, Shippin, A. B. (Pennsylvania),	Penn's Grove, N. J., Philadelphia,	3429 Walnut St. 1820 Pine St.
Long, John Lindsay, A. B. (William and Mary),	Crewe, Va.,	27 N. 34th St.
Loewenstein, Sidney, Lippmann, Emil Abraham,	Philadelphia, do.	3117 Diamond St. 516 Master St.

Name.	Residence.	City Address.
MacCoy, William Logan, A. B. (Princeton),	Philadelphia,	[Overbrook Ave. and 58th St.]
McCormick, Daniel, Martin, Edward Burk, A. B. (Pennsylvania),	do. do.	1943 N. 11th St. 2009 Columbia Ave.
Milner, Byron Albert, B. S. (Pennsylvania),	do.	1106 Morris St.
Montealegre, Eduardo, A. B. (El Salvador In- stitute),	Chinandega, Nicaragua, C. A.,	3338 Walnut St.
Moore, Charles Angelo, A. B. (Pennsylvania),	Philadelphia,	4254 Parkside Ave.
Murphy, James Joseph, Nachod, Julius Ernest, B. S. (Pennsylvania),	do. Glenside.	4857 Chestnut St.
O'Neill, Robert Joseph, Paul, Frank Albert, B. S. (Pennsylvania),	Philadelphia, do.	334 Reed St. 3728 Walnut St.
Pauxtis, Simon Francis, Porter, Isaac Theodore, C. E. (Penna. Military Coll.),	Edwardsville, Philadelphia,	3301 Walnut St. 3068 Frankford Ave.
B. S. (Pennsylvania), Pearlstein, Louis, Pleet, William, A. B. (Johns Hopkins),	do. Baltimore, Md.	1521 N. 10th St. 121 S. 34th St.
Rahilly, David Aloysius, Read, Raymond Preston, Reeder, Jr., William Henry, Reeves, Edmund Hoffman, B. S. (Pennsylvania),	Philadelphia, Camden, N. J., Ogden, Utah, Bridgeton, N. J.,	2218 S. 13th St. [1275 Park Boulevard.] 56 N. DeKalb St. Dorm. 397 Alumni.
Richardson, Edgar Snyder, A. B. (Princeton),	Bernville,	Dorm. 40 Memorial.
Roberts, Rebecca McInnes, Rosenstein, Joseph, Roth, Albert Michael, Salasin, Frank, Saxe, Michael, Scatchard, George Herbert, Shanaman, Forrest Ritter, A. B. (Harvard),	Norristown, Philadelphia, do. do. do. Reading,	[701 DeKalb St.] 1728 S. Broad St. 215 South St. 827 Dickinson St. 1602 N. 8th St. 6339 Baynton St., Gtn. Dorm. 374 Hopkinson.
Shields, Albert William, A. B. (Yale),	Philadelphia,	3921 Walnut St.
Short, Frank William, Smith, Walter Bell, B. S. (Pennsylvania),	Clearfield, Philadelphia,	Dorm. 227 Baldwin. 1719 N. 22d St.
Solis-Cohen, David Hays, Somers, Joseph Vincent, A. B. (St. Joseph's),	do. do.	1525 Walnut St. 1821 S. Broad St.
Stanger, Jr., Francis Albert, Sterling, Philip, Sterritt, Robert John, A. B. (Princeton),	Bridgeton, N. J., Philadelphia, do.	3429 Walnut St. 2412 Frankford Ave. 3314 Race St.

Name.	Residence.	City Address.
Stone, Joseph Knox, Strawbridge, Max,	Beaver, Norristown,	Dorm. 33 Memorial [26 W. Main St.]
Wade, Daniel Eligius, A. B. (Yale),	Philadelphia,	3915 Walnut St.
Wernick, Abraham,	do.	220 Brown St.
Willig, Samuel,	do.	1949 S. 11th St.
Windle, William Butler, A. B. (Haverford),	West Chester,	3537 Locust St.
Wingerd, Edmund Culbertson, A. B. (Franklin and Marshall),	Chambersburg,	132 S. 39th St.
Winokur, Joseph Benjamin,	Philadelphia,	1741 N. 32d St.
Wischan, Adolf,	do.	726 N. 7th St.
Wolfe, James Harold, M. E. (Lehigh),	do.	1701 Diamond St.
Woodward, Thomas Mullen, A. B. (Princeton),	do.	311 N. 37th St.
Zsatkovich, Gregory Ignatius, A. B. (Pittsburg College of Holy Ghost),	Homestead,	3611 Locust St.

## FIRST-YEAR CLASS.

Aarons, George Phineas,	Philadelphia,	1909 N. Park Ave.
Adams, Edwin King,	do.	2203 Mt. Vernon St.
Adams, Jr., John,	do.	2203 Mt. Vernon St.
Adams, John Horace Treager,	do.	1330 W. Allegheny Ave
Alden, John Percy Coleman, Litt. B. (Princeton),	Cornwall,	Aldine Hotel.
Ankney, Samuel Marion A. B. (Grove City),	Welty,	40 N. 36th St.
Baker, Ralph Jackson, A. B. (Swarthmore),	Lansdowne,	3641 Locust St.
Bellak, Joseph Faussett,	Philadelphia,	1307 N. 13th St.
Bernhard, Clarence Anthony, A. B. (Bucknell),	Gwynedd Valley,	407 Hale Bldg.
Bernstine, Louis,	Philadelphia,	2126 S. 8th St.
Blair, John Leo,	Warren,	Dorm. 127 Class of '87.
Boatman, Ernest N.,	Irving, Kans.,	3605 Sansom St.
Bossard, Jay Carver,	Philadelphia,	Lancaster and City Aves.
Brennan, Eugene Ambrose, A. B. (Princeton),	Edwardsville,	3308 Walnut St.
Brown, 3d, Thomas Wistar, B. S., A. M. (Pennsylvania),	Philadelphia,	School Lane, Gtn.
Burtt, Howard A. B. (Haverford),	do.	1003 Arrott St., Fkd.
Carow, James Russell,	Merchantville, N. J.,	
Clement, Jr., John Browning, A. B. (Haverford),	Overbrook,	3337 Walnut St.

Name.	Residence.	City Address.
Cochran, Joseph Hunicker, B. S. (Pennsylvania),	Wyncote,	3453 Woodland Ave.
Colket, George Hamilton, A. B. (Yale),	Philadelphia,	258 S. 18th St.
Coll, Francis Joseph,	do.	3017 N. Broad St.
Connor, William Aloysius,	do.	1500 Fairmount Ave.
Corio, Joseph Anthony,	Altantic City, N. J.,	1636 S. Carlisle St.
Creps, Elbie Edison,	Indiana,	3340 Chestnut St.
Davidson, Jacob Walter,	Philadelphia,	436 N. 7th St.
Davis, Andrew Jay Davis,	South Brownsville,	3471 Sansom St.
Deacon, William Wesley,	Philadelphia,	6006 Greenway Ave.
Dixon, John Shipley, B. S. (Pennsylvania),	Wallingford,	3337 Walnut St.
Dutton, Harwell Beeson, A. B. (Swarthmore),	Chester,	[607 W. 7th St.]
Eastburn, Arthur M.,	Doylestown,	3641 Locust St.
Eggleston, Raymond Edward,	Waterbury, Conn.,	268 S. 38th St.
Elfman, Louis Agassiz,	Philadelphia,	N. W. cor. 6th and Mar- ket Sts.
Enterline, LeRoy Earl, B. S. (Penna. Coll.),	Ashland,	3708 Spruce St.
Farrier, Granville Coe,	St. Louis, Mo.,	Dorm. 29 Rodney.
Farquhar, Walter Southall,	Pottsville,	3745 Spruce St.
Faulkner, Edmund Clinton,	Middletown, N. Y.,	223 S. 33d St.
Felton, William Warwick,	Philadelphia,	4135 Westminster Ave.
Fessenden, Gladstone, A. B. (Yale),	do.	524 Westview St., Gtn.
Frank, Louis John, A. B. (St. Joseph),	do.	4020 Chestnut St.
Friedman, Raoul Mendel,	Vaslui, Romania,	148 N. Millick St.
Fruit, Fred Thomas, A. B. (Princeton),	Sharon,	The Normandie.
Garner, Howard Wilson, A. B. (Pennsylvania),	Hatboro,	122 S. 34th St.
Giard, Leon A., B. S. (Spring Hill Coll.),	Danbury, Conn.,	Dorm. 28 Rodney.
Gilbert, J. Roland,	Quarryville,	5217 Girard Ave.
Greenblatt, Louis,	Philadelphia,	540 Reed St.
Haggerty, John Francis,	Pittsburg,	3711 Woodland Ave.
Hamilton, Philip Earle, B. S. (Geneva Coll.),	Beaver Falls,	3451 Chestnut St.
Harcourt, Ralph Eldridge,	Philadelphia,	922 S. 49th St.
Herman, Mayer Elias,	do.	111 S. Second St.
Holland, James Burnett, B. S. (Pennsylvania),	Conshohocken,	Dorm. 363 Baird.
Horan, Jr., Hubert Joseph,	Philadelphia,	2008 Arch St.
Howell, Samuel Lamson, A. B. (Yale),	do.	925 N. 20th St.
Hughes, William Thomas,	Pittsburg,	3711 Woodland Ave.

Name.	Residence.	City Address.
Hurlbut, Clarke Stanley, B. S. (Yale),	Philadelphia,	1925 Chestnut St.
Hyndman, Thomas McCaughey-Roslyn, rin,		Dorm. 439 Hopkinson.
Jacks, Charles Thomas, A. B. (Muhlenberg),	Allentown,	3350 Walnut St.
Johnson, Wade McCall, A. B. (Princeton),	Ogden, Utah,	3338 Walnut St.
Jones, Jr., Paul,		
Keely, David Fulmer, B. S. (Pennsylvania),	Hatboro, Philadelphia,	433 Lyceum Ave., Rox- borough.
Keenan, John Joseph,		
Kennedy, Edward Michael, Litt. B. (Notre Dame),	Orston, N. J., Scottsdale,	
Kenny, Thomas Augustus,	Newark, N. J.,	3429 Walnut St.
Kent, Everett,	Bangor,	3255 Locust St.
Kent, Jr., Henry Thomas, A. B. (Cornell),	Clifton Heights,	
Kirby, Allan Lewis,	Philadelphia,	431 W. Lehigh Ave.
Klein, Louis,	do.	1740 W. Erie Ave.
Korn, Michael,	do.	443 South St.
Kuhl, George, A. B. (Muhlenberg),	Allentown,	Dorm. 13 Rodney.
Lanard, Joseph	Philadelphia,	2004 South St.
Larzelere, Charles Townley, Litt. B. (Princeton),	Norristown,	[1201 DeKalb St.]
Layton, Caleb Sipple, B. S. (Pennsylvania),	Georgetown, Del.,	Dorm. 388 Lippincott.
Levi, Max,	Philadelphia,	233 Christian St.
Levick, Maurice Elihu,	do.	3835 Cambridge St.
McClure, James Haines, B. S. (Pennsylvania),	Elk Lick,	Dorm. 207 Leidy.
McEnteer, Ben,	Du Bois,	3708 Spruce St.
McHugh, Franklin Stanis- laus,	Locust Gap,	Dorm. 56 Memorial.
McKaign, Edgar Stanley, Litt. B. (Princeton),	Philadelphia,	The Newport.
McMichael, Charles T.,		
Mackin, Francis Merle,	do.	2110 Pine St.
Malis, David Salmon,	Wilkesbarre,	3301 Walnut St.
Marshall, John Garvin, A. B. (Grove City),	Philadelphia,	321 South St.
Marshall, Thomas Randolph, Ph. B. (Brown); M. A. (Yale),	New Galilee,	3451 Chestnut St.
Matten, Charles William, A. B. (Schuylkill Seminary),	Philadelphia,	1834 N. 32d St.
Maury, Austin Gardetto, Litt. B. (Princeton),	Reading,	3608 Locust St.
Medrano, Higinio Julio, B. S. (Estrado Palmo),	Philadelphia,	306 S. 10th St.
	Guantanamo, Cuba,	3320 Walnut St.

Name.	Residence.	City Address.
Metzger, Maurice Rutt, A. B. (Lebanon Valley),	Middletown,	3255 Locust St.
Mills, Charles William, A. B. (Yale),	Narberth,	321 Land Title Bldg.
Miranda, Juan Demofilo, A. B. (Juniata),	San Juan, P. R.,	3255 Woodland Ave.
Moffitt, Guy, A. B. (Wash. and Jeff.),	Charleroi,	Dorm. 435 Baird.
Morgan, Thomas Lyons, Morris, Leland Burnette, Mulherin, James Lonagan, A. B. (Sacred Heart),	Uniontown, Overbrook, Augusta, Ga.,	Dorm. 435 Baird. [6321 Lancaster Ave.]
Mumford, James Oliver, A. B. (Amherst),	Honesdale,	Dorm. 21 Smith.
Niles, Michael Schall, O'Brien, James Joseph, Ogden, John Robert,	York, Philadelphia, do.	Dorm. 41 Bodine. 3615 Locust St. 47 N. 52d St. 2208 Hunting Park Ave.
Parkin, Harold Clarke, Litt. B. (Princeton),	Chester,	[723 Madison St.]
Patton, Jr., Charles Taylor, Paxson, Charles Edward, B. S. (Pennsylvania),	Philadelphia, Camden, N. J.,	3805 Locust St. [132 Main St.]
Pestcoe, Maxwell, Presmont, Arthur Nathan, Racusin, Morris Julius, Rattin, David Edward, Rose, Abraham Moses, Rossheim, Irving David, Rotan, Ellwood Joseph, Rownds, William Aloysius, Ryan, James Francis, A. B. (St. Joseph's),	Philadelphia, Shamokin, Philadelphia, do. do. do. do. do. do.	124 Lombard St. 4011 Chestnut St. 1941 Germantown Ave. 1638 N. Franklin St. 916 S. 5th St. Dorm, 45 E. F. Smith. [Oak Lane.] Girard College. 1534 N. 19th St.
Saltzgiver, Jr., Jay Calvin, Schatz, Ralph Hinkle, A. B. (Muhlenberg),	Harrisburg, Allentown,	Dorm. 31 Memorial. Dorm. 13 Rodney.
Schneeberg, Charles, B. S. (Pennsylvania),	Philadelphia,	2912 N. 5th St.
Scott, John Fulton Reynolds, Seipp, John Edward,	do. do.	The Gladstone. S. E. cor. 4th and Sus- quehanna Ave. 121 S. 34th St.
Shaffer, Adam Benjamin Charles,	Irwin,	Dorm. 437 Baird.
Shapera, Harry, Shapiro, Harry, Shaw, Robert Saxton, Shimer, James Myron, A. B. (Muhlenberg),	Pittsburg, Eagleville, Philadelphia, Allentown,	345 N. 2d St. 5132 Arch St. 3350 Walnut St.
Shrader, James Frank, A. B. (Westminster),	Butler,	3707 Locust St.
Sloan, Paul Milliken,	Pittsburg,	113 S. 37th St.

Name.	Residence.	City Address.
Smith, Hoxie Harrison, B. S. (Pennsylvania),	Bryn Mawr,	2025 Locust St.
Smith, James Stephen Grady, A. B. (Mt. St. Mary's),	Beaver Meadow,	3305 Walnut St.
Smythe, Jr., J. Henry,	Philadelphia,	1228 S. 51st St.
Sommer, Frank,	do.	S. E. cor. 17th and Susquehanna Ave
Stadlen, Max,	do.	1929 N. 8th St.
Stem, Samuel George, A. B. (Lehigh),	South Bethlehem,	1909 Pine St.
Supinski, Paul Cezz,	Trenton, N. J.,	124 S. 34th St.
Swartz, Aaron Snyder, A. B. (Princeton),	Norristown,	[904 DeKalb St.]
Titman, Charles Eugene,	Philadelphia,	816 Preston St.
Toro, Ramon Juan,	San German, P. R.,	121 S. 34th St.
Waite, Ralph John,	Philadelphia,	4725 Hazel Ave.
Wallace, Chester Lee, A. B. (Wash. and Jeff.),	East Brady,	3607 Locust St.
Wanger, George, A. B. (Pennsylvania),	Norristown,	Dorm. 420 Lippincott.
Watson, Palmer,	Philadelphia,	1609 Summer St.
Weest, Elgin Ernst,	Chester,	[413 E. 10th St.]
White, Charles Frederick,	Springfield, Ill.,	4400 Chestnut St.
White, Raymond Alphonso,	Melrose,	Oak Lane, P. O.
White, Walter Rhoads, A. B. (Pennsylvania),	Lansdowne.	
Wilder, Raymond Sargent, A. B. (Harvard); M. D. (Harvard),	Cambridge, Mass.,	3727 Locust St.
Wilson, Gael Garfield, Ph. B. (Grove City),	Ellwood City,	3467 Sansom St.
Woodhouse, David Robbins,	Wethersfield, Conn.,	3704 Spruce St.
Woodring, Roy Beck, A. B. (Lehigh),	Allentown,	3439 Chestnut St.
Woodruff, Franklin Kenneth,	Northampton, Mass.,	Dorm. 41 Bishop White.
Zweighhaft, Lewis, D. D. S. (Philadelphia Dental),	Philadelphia,	239 S. Melville St.

## SPECIAL STUDENTS.

Benton, Frederick Andrew, A. B., A. M. (Williams),	Philadelphia,	3726 Sansom St.
Bye, Frank Paxson, B. S. (Pennsylvania),	West Chester.	
de la Rue, Sydney Brandiff,	Haddonfield, N. J.	
Dickson, Conway Wing, A. B. (Yale),	Berwick,	Dorm. 12 Rodney.
Flick, Jr., Lawrence Francis, A. B. (St. Joseph's),	Philadelphia,	736 Pine St.

**STUDENTS.**

721

Name.	Residence.	City Address.
Gradwell, James Stephen, Hall, Ralph Owens, Ph. B. (Dickinson),	Gloucester, N. J., Beech Creek,	[529 Monmouth St.] 3607 Locust St.
Lisle, John, A. B. (Pennsylvania),	Philadelphia,	2109 Spruce St.
Miles, Perry Lester, (West Point),	United States Army,	1208 N. Broad St.
Naylor, John Hyatt, Tait, Edgar Wendell, A. B. (Yale),	Norristown, Bradford,	[1019 DeKalb St.] 122 S. 34th St.
Walsh, John Edward, Wills, Frederick Bowen, A. B. (Williams),	Philadelphia. Trenton, N. J.,	1507 N. Park Ave. [307 Hamilton Ave.]

**PARTIAL STUDENTS.**

Rodgers, Philip Mowry,	Chester,	[353 Kerlin St.]
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**SUMMARY.**

Students of the Third-year Class .....	65
Students of the Second-year Class .....	99
Students of the First-year Class .....	144
Special Students.....	13
Partial Students.....	1
Graduate Students.....	5
Total.....	327

## DEPARTMENT OF MEDICINE.

## POST-GRADUATE STUDENTS.

Name.	Residence.	City Address.
Bunting, Josiah T., M. D. (Pennsylvania),	Philadelphia,	4040 Walnut St.
Holland, Estelle D., M. D. (Washington Univ.),	Hot Springs, Ark.,	Normandie Hotel.
Ledbetter, Ralph E., M. D. (Pennsylvania),	Norfolk Navy Yard, Va.	
Lowder, Lillian Crockett, M. D. (Coll. of Physicians, Indianapolis, Ind.),	Indianapolis, Ind.,	3729 Spruce St.
Ross, Alexander J., M. D. (Pennsylvania),	Camden, N. J.,	[608 Benson St.]
Varian, Miles G., M. D. (Pennsylvania),	Corain, Cal.,	1716 Locust St.
Williams, Harry Johnstone, M. D. (Howard Univ.),	Washington, D. C.,	1908 Carpenter St.

## FOURTH-YEAR CLASS.

Adams, Francis Raymond,	Mansfield,	Dorm. 56 Coxe.
Ammarell, Winfield Harrison,	West Leesport,	Dorm. 59 Coxe.
Armstrong, James, B. S. (Pennsylvania),	Columbia,	3815 Spruce St.
Ballantyne, James Van Horne, A. B. (Allegheny),	Derry Station,	Dorm. 304 Brooks
Best, William Henry,	Brooklyn, N. Y.,	3601 Locust St.
Boehm, Charles Hilary,	Wilmington, Del.,	225 S. 33d St.
Boice, Edmund Simpson, A. B. (Washington and Lee),	Abingdon, Va.,	3533 Locust St.
Bowker, Abraham William,	Philadelphia,	1800 S. Broad St.
Brown, Raymond W.,	Worcester, N. Y.,	3261 Sansom St.
Campbell, Hugh Baird,	Philadelphia,	2224 N. 30th St.
Cleveland, Howard Martin,	Mt. Jewett,	3404 Sansom St.
Clogher, Ralph Edward,	Hinsdale, Mass.,	Dorm. 369 Hopkinson.
Cooper, Linfred Lindale, A. B. (Delaware),	Wyoming, Del.,	Dorm. 417 Franklin.
Coover, Carson, A. B. (Princeton),	Harrisburg,	Dorm. 50 Tower.
Coulter, John Stanley,	Philadelphia,	4609 Germantown Ave.
Curtiss, F. Homer, B. S. (Purdue),	Austin, Texas,	3639 Locust St.
Dailey, Thomas Joseph,	Plymouth,	3735 Spruce St.
Davis, Alquin J.,	do.	3815 Spruce St.
Davis, Frederick Allison,	Weatherford, Texas,	3601 Locust St.
Davis, George Cresswell, A. B. (Cornell),	Milton,	Dorm. 213 Foerderer.

Name.	Residence.	City Address.
Dill, William Milton,	Philadelphia,	1948 E. Allegheny Ave.
Draper, Dexter Wright,	Boston, Mass.,	Dorm. 10 Bishop White
Eckels, Lauren Samuel,	Philadelphia,	3654 N. Broad St.
B. S. (Pennsylvania),		
Ferguson, William Norman,	do.	125 Susquehanna Ave.
Forcheimer, Herbert Herman,	Mobile, Ala.,	Dorm. 36 Coxe.
Gallagher, John Patrick, Jr.,	Philadelphia,	2154 N. Broad St.
George, Chester McIntyre,	Williamson School,	225 S. 33d St.
Geyelin, Henry Rawle,	Villanova,	Dorm. 235 Baird.
A. B. (Pennsylvania),		
Ginsburg, Morris,	Philadelphia,	524 Mountain St.
Goldstein, Hyman Isaac,	Camden, N. J.,	[1402 Mt. Ephraim Av.]
Gorman, Henry Aloysius,	Philadelphia,	4507 N. 19th St.
Gudger, Hubert Barnard,	Asheville, N. C.,	3529 Locust St.
Ph. B. (North Carolina),		
Haig, Chester Raymond,	Merchantville, N. J.	
A. B. (Haverford),		
Hamblen, Robert North,	Spokane, Wash.,	26th and Lombard Sts.
Hartz, William,	Philadelphia,	1147 S. 9th St.
Harvey, Walter Benjamin,	Dunreith, Ind.,	Dorm. 46 Morris.
Haywood, Hubert Benbury,	Raleigh, N. C.,	3601 Locust St.
Ph. B. (North Carolina),		
Heilman, Martin Webster,	Leechburg,	3449 Walnut St.
Henry, Charles Parmenas,	Basking Ridge, N. J.,	3340 Walnut St.
B. S. (Princeton),		
Herman, J. Leon,	Gordonville,	Dorm. 54 Coxe.
Hoey, Rollo Howard,	McKeesport,	3457 Walnut St.
Hopkins, Arthur Haddon,	Ardmore,	3453 Woodland Ave.
B. S. (Haverford),		
Hopper, Arthur West,	Canonsburg,	Dorm. 30 Coxe.
A. B. (Washington and Jefferson),		
Howard, Jasper Victor,	Kinston, N. C.,	3601 Locust St.
A. B. (North Carolina),		
Howorth, John,	Wilkesbarre,	Dorm. 43 Morris.
Hughes, Robert Coffman,	Tredyffrin,	3268 Chancellor St.
Hungerford, George Howard,	Philadelphia,	2329 Christian St.
Hurst, Spencer Wells,	Talmage,	3449 Walnut St.
Jackson, Arthur Flournoy,	West Point, Ga.,	3457 Walnut St.
B. S. M. S. (Alabama Polytechnic).		
Jonas, Leon,	Philadelphia,	2253 N. 17th St.
Kenny, John A.,	Wilkesbarre,	Dorm. 53 Coxe.
Key, Benjamin Witt,	Waco, Texas,	3601 Locust St.
A. B. (Vanderbilt),		
Kingsbury, Oscar J.,	Nanticoke,	3815 Spruce St.
Klevan, Oscar Jesse,	Philadelphia,	533 N. 3d St.
Koch, Scott Lorain,	Lyon Station,	Dorm. 150 New York
A. B. (Princeton),		Alumni.
Kyper, Don Cameron,	Bellwood,	Dorm. 216 Foerderer.
Levi, Irwin Palmer,	Anniston, Ala.	Dorm. 446 Lippincott.
Lewis, Charles Anthony,	Steelton,	Douglas Hospital.
A. B. (Lincoln),		

## DEPARTMENT OF MEDICINE.

Name.	Residence.	City Address.
Li, Tsing Meu,	Hong Kong, China,	Dorm. 234 McKean.
Liebman, Jay Spiegler,	Youngstown, Ohio,	Dorm. 13 Morgan.
Lilly, John Hall,	Philadelphia,	1033 N. 2d St.
Lindenberg, Henrique,	Cabo Frio, Brazil,	Dorm. 35 Morgan.
Lonergan, Philip Aloysius,	Scranton,	3703 Locust St.
Lynch, Edward James,	Portland, Conn.,	3412 Ludlow St.
Lyons, Joseph William,	Huntington, W. Va.,	3745 Spruce St.
A. B. (West Virginia),		
McBride, Hesser Gilford,	Newark, N. J.,	3741 Spruce St.
Mann, Bernard,	Philadelphia,	1044 N. 2d St.
Mann, Victor Llewellyn,	Petoskey, Mich.,	3268 Chancellor St.
Marshall, Samuel Mathewson	Milford, Del.,	Dorm. 442 Hopkinson.
Donnell, A. B. (Delaware),		
Means, John William,	Columbus, O.,	Dorm. 25 E. F. Smith.
Melamed, Bernard,	Philadelphia,	1312 S. 5th St.
B. S. (Univ. of Bucharest),		
Mendenhall, Arthur M.,	Winchester, Ind.,	3212 Summer St.
Meyer, Arthur Louis,	Garnavillo, Iowa,	3718 Walnut St.
A. B. (Beloit),		
Miller, Daniel Tucker,	Clinton, Ind.,	515 Woodland Terrace.
A. B. (Indiana),		
Miller, Fisher Booth Eckert,	Reading,	3619 Locust St.
Moffitt, Lloyd,	N. Yakima, Wash.,	Dorm. 20 Rodney.
Montenegro, Benedicto,	São Paulo, Brazil,	Dorm. 38 Bishop White
Mossman, Robert Gillis,	Greenville,	Dorm. 365 Baird.
Munro, Harry Clay,	White Hall,	206 S. 37th St.
Myler, Theodore Frederic,	Pittsburg,	Dorm. 210 Franklin.
Oliver, Walter Holmes,	Philadelphia,	663 N. 52d St.
Philips, Franklin Pierce,	Leeper,	Dorm. 11 Coxe.
Ph. B. (Grove City),		
Pyles, Franklin Pierce,	São Paulo, Brazil,	Dorm. 11 Rodney.
Rehfuss, Martin Emil,	Philadelphia,	1417 S. Broad St.
Romberger, Floyd Troutman,	Elizabethville,	3741 Spruce St.
Ross, Otho B.,	Charlotte, N. C.,	3601 Locust St.
A. B., A. M. (North Carolina),		
Rulon, Samuel Archer, Jr.,	Philadelphia,	Dorm. 23 Coxe.
Sajous, Louis Theodore de	do.	2043 Walnut St.
Medici, B. S. (Pennsylvania),		
Salzman, Jacob Yetter,	Danville,	5033 Irving St.
Sanderson, Charles Hassiepen	Philadelphia,	4925 Lancaster Ave.
A. B. (LaSalle),		
Sewell, Harry Dickey,	Mansfield, Ohio,	Dorm. 443 Hopkinson.
B. S. (Pennsylvania),		
Shoudy, Loyal Ambrose,	Ellensburg, Wash.,	Dorm. 11 Coxe.
A. B. (Univ. of Washington),		
Shumacker, Leo,	Holly Springs, Miss.,	Dorm. 300 Brooks.
Ph. B. (Mississippi),		
Shuman, Warren Newton,	Mainville,	206 S. 37th St.
A. B. (Dickinson),		
Simpson, James Knox,	Laurens, S. C.,	3457 Walnut St.
Siner, Joseph Linton,	Philadelphia,	Dorm. 355 Class of '87

## STUDENTS.

725

Name.	Residence.	City Address.
Sledge, Edward Simmons, B. S. (Pennsylvania),	Mobile, Ala.,	Dorm. 25 E. F. Smith.
Steinke, Carl Rossow, B. S. (Coe College),	Atlantic, Iowa,	Dorm. 443 Hopkinson.
Stockler, Joseph Anthony,	Philadelphia,	3607 Locust St.
Stone, Charles Henry,	Coatesville,	Dorm. 45 Morris.
Swartley, William Blaine,	Lansdale.	
Updegraff, Charles Earl, B. S. (Washington and Jefferson),	Bolivar,	Dorm. 30 Coxe.
Villalobos, Ruben,	San Isidro de Heredia, Costa Rica,	3324 Woodland Ave.
Wakefield, Guy Freeman,	West Salem, Wis.,	3457 Walnut St.
Walls, Eli Slifer, B. S. (Bucknell),	Lewisburg,	Dorm. 213 Foerderer.
Watt, Charles Channing, Jr.,	Philadelphia,	3641 Locust St.
Way, Clarence Wilton,	Dennisville, N. J.,	Dorm. 11 Coxe.
Whalen, Walter Edward,	Ogden, Utah,	Dorm. 247 Carruth.
Wilkinson, Arthur Ryland,	Philadelphia,	2231 Oxford St.
Williams, Philip Francis, Ph. B. (Lafayette),	Martin's Ferry, O.,	3711 Locust St.
Wise, Henry Moses,	Philadelphia,	2043 N. Park Ave.
Witmer, Charles Howard,	Neffsville,	3340 Walnut St.
Yazujian, Dikran Maruké,	Cesarea, Asia Minor,	526 S. 52d St.

## THIRD-YEAR CLASS.

Aller, Thomas Gustin, Jr., D. D. S. (Pennsylvania),	Brooklyn, N. Y.,	3421 Walnut St.
Archer, Palmer Marion, A. B. (Univ. of Texas),	Houston, Texas,	Dorm. 54 E. F. Smith.
Autenreith, William Clifford,	New Brighton,	3606 Locust St.
Avilés, Angel Virgilio, B. S. and L. (Pedro Carbo College),	Quito, Ecuador, S.A.	3348 Walnut St.
Baldi, Frederick Sobernheimer,	Philadelphia,	Dorm. 52 E. F. Smith.
Barton, Amos Ethan, A. B. (Bucknell),	Vilas,	3707 Locust St.
Baum, Harry Lester,	Shelbyville, Ill.,	Dorm. 21 Wilson.
Beddoe, Arthur Eynon,	Scranton,	Dorm. 32 Morgan.
Bonner, William F.,	San Antonio, Texas,	Dorm. 142 Lippincott.
Bowen, Clement Remington,	Philadelphia,	4953 Catharine St.
Bowen, John Thomas, A. B. (Emory College),	Five Points, Ala.,	Dorm. 205 Leidy.
Bresnahan, John Francis,	Philadelphia,	Dorm. 117 McKean.
Brubaker, Walter Hurst,	Lebanon,	3340 Walnut St.
Buckingham, John Edgar Burnett,	Philadelphia,	3702 Locust St.
Carson, John Baker, B. S. (Pennsylvania),	do.	Dorm. 107 Leidy.
Chernausek, Samuel, A. B. (Minnesota),	Hutchinson, Minn.,	213 De Kalb Sq.

## DEPARTMENT OF MEDICINE.

Name.	Residence.	City Address.
Clark, Ivor Gordon,	Zanesville, Ohio,	3601 Locust St.
Conlon, Philip Jerome,	Newark, N. J.,	3344 Walnut St.
Cook, Joseph Wright, A. B. (Princeton),	Pottstown,	3702 Locust St.
Corcoran, Michael Patrick,	Philadelphia,	206 N. 2d St.
Cox, Milo Ward, A. B. (Westminster),	Kane,	Dorm. 365 Baird.
Crothers, George Frank,	Upland.	3739 Spruce St.
Cunningham, George Smith, A. B. (Princeton),	Blairsville,	Dorm. 40 Bodine.
Davis, Henry Blaine, B. S. (Pennsylvania),	Burlington, N. J.,	Dorm. 124 Baldwin.
Davis, Hugh Karr,	Wellsboro,	3617 Locust St.
Davis, James Wagner,	Statesville, N. C.,	134 Green St.
Defoney, Clinton,	Philadelphia,	3610 Walnut St.
Deitrick, George Albert,	Mt. Carmel,	3702 Locust St.
Dillon, Charles Aloysius,	Butler,	Dorm. 114 Foerderer.
Dorwarth, Charles Votteler,	Philadelphia,	Dorm. 34 Bishop
Dunn, James Conger, A. B. (Grove City),	West Union,	White.
Fawcett, Ivan,	Wheeling, W. Va.,	Dorm. 10 Bodine.
Fewell, Alex Garrison, A. B. (Presbyterian of S. C.),	Rock Hill, S. C.,	3457 Walnut St.
Forbes, Robert Sabin,	Minneapolis, Minn.,	116 S. 45th St.
Franksen, Charles Henry,	Philadelphia,	4803 Gordon St.
Frantz, Jacob Paul, Ph. B. (Franklin and Marshall),	Lancaster,	3641 Locust St.
Freeman, Stanley,	Plymouth,	Dorm. 30 Wilson.
Friedmann, Otto Fleisher,	Philadelphia,	2107 N. Mervine St.
Gibson, William Curtis, A. B. (Virginia),	Suffolk, Va.,	Dorm. 316 Leidy.
Goos, Harry William,	Philadelphia,	2451 N. 2d St.
Gordon, William Murray,	do.	1422 Venango St.
Gorman, Peter Jerome,	Inkerman,	Dorm. 349 McKean.
Graff, James Brown, B. S. (Gettysburg),	Worthington,	Dorm. 371 Hopkinson.
Griffin, Clyde Oden,	Rocky Mount, N. C.,	3340 Chestnut St.
Griffith, Morgan Everett,	Wilkesbarre,	3610 Walnut St.
Hauser, Raymond Jack,	Danville,	3711 Woodland Ave.
Heller, James Beyel, Jr.,	Pottsville,	3344 Walnut St.
Henneberger, Charles Ellsworth,	Greencastle,	Dorm. 124 Baldwin.
Herbst, William Frederick,	Allentown,	Dorm. 236 Fitler.
Hewson, William, A. B. (Pennsylvania),	Philadelphia,	2120 Spruce St.
Hobbs, William Henry, Jr.,	Martin's Ferry, Ohio	3713 Locust St.
Hodges, Fred Murphy,	Linden, N. C.,	3815 Spruce St.
Holt, Edward Zell,	Philadelphia,	145 Sumac St.
Hoover, Ernest Justin,	Altoona,	Dorm. 148 New York Alumni.
Horn, Harry Taylor,	New Paris,	215 DeKalb Sq.

Name.	Residence.	City Address.
Ivey, Ellis Vanderslice, B. A., M. A. (Virginia),	Suffolk, Va.,	Dorm. 320 Leidy.
Keating, Peter McCall,	Wawa,	3453 Woodland Ave.
Kelly, James Raymond,	Hornell, N. Y.,	Dorm. 383 Lippincott.
Kennard, William Sorrento,	Newark, N. J.,	3628 Sansom St.
Kimmelman, Louis,	Philadelphia,	1206 Mifflin St.
Kirkpatrick, Clarence Apple-ton, B. S. (Pennsylvania),	do.	Dorm. 54 Rodney.
Klock, Glenn George,	Plymouth, N. H.,	3617 Locust St.
Landon, Lyndon Holt,	DeKalb, N. Y.,	208 S. 37th St.
Leigh, Herbert Crozier,	Philadelphia,	4705 Smick St.
Leinbach, Howard M.,	Mt. Penn,	920 N. St. Bernard St.
Leitch, John George,	Philadelphia,	747 S. 22d St.
Lewis, Robert Morton, A. B. (Pennsylvania),	do.	3453 Woodland Ave.
Lingo, Marvel Smith,	Norristown,	[R.F.D. 4].
Loftus, Walter Emmett, A. B. (Holy Cross),	Carbondale,	Dorm. 56 Rodney.
Londrigan, Joseph Francis,	Hazleton,	Dorm. 16 Morgan.
Lotterhos, George, A. B. (Southwestern Pres-byterian),	Crystal Springs, Miss.,	Dorm. 205 Leidy.
Luby, Daniel Francis,	Peabody, Mass.,	307 S. 39th St.
McCarthy, Harry Lloyd,	Altoona,	Dorm. 26 Rodney.
McIntosh, William Page, Jr.,	Portland, Me.,	Dorm. 50 Coxe.
McKinstry, Guy Hale Ph. B. (Grove City),	Mercer,	Dorm. 42 Bishop White.
McKnight, Howard Allison, B. A. (Pennsylvania),	Philadelphia,	400 N. 40th St.
McSherry, Emory Ford,	Brookville, O.,	3413 Walnut St.
MacDonald, Ronald Foley, Jr.,	Antigonish,	212 S. 37th St.
A. B. (St. Francis Xavier),	Nova Scotia,	
Maits, Charles Buckley, B. S. (Pennsylvania),	Pittsburg,	Dorm. 42 Bodine.
Maxson, Louis Herbert, A. B. (Boston Univ.),	Philadelphia,	Dorm. 54 Rodney,
Mays, Thomas Henry,	do.	1829 Spruce St.
Merscher, Washington,	Germantown,	[5500 Chew St.]
Mitchell, Albert Graeme,	Philadelphia,	2213 St. James Terrace.
Munroe, William Elmer,	Pittsburg,	Buckingham Apartments.
Nichols, Stanley Hetfield,	Jamaica, N. Y.,	255 S. 37th St.
Nietsch, Lothar,	Breslau, Germany,	3346 Walnut St.
Noble, Charles Greylock,	Philadelphia,	[Noble.]
Nylin, Josef Benediktus,	Stockholm, Sweden,	Dorm. 23 Coxe.
O'Brien, John Patrick,	Philadelphia,	5446 Arch St.
Paniagua, Frutos,	Chinandega, Nicara-gua, C. A.,	3338 Walnut St.
Penza, John Gennaro,	Philadelphia,	921 Federal St.
Pleasants, Henry, Jr., A. B. (Haverford),	Wayne,	3453 Woodland Ave.

## DEPARTMENT OF MEDICINE.

Name.	Residence.	City Address.
Quinn, Edmund Lennon, S. B. (Chicago),	Chicago, Ill.,	Dorm. 55 E. F. Smith
Raab, F. Henry,	Belleville, Ill.,	Dorm. 321 Leidy.
Reese, LeRoy Joseph,	Johnstown,	3610 Walnut St.
Reese, William Cleveland,	Wilkesbarre,	Dorm. 20 Coxe.
Remer, Daniel Flick,	Williamsport,	Dorm. 22 Memorial.
Robb, Claude Albert,	Chicora,	3739 Spruce St.
Robinson, Charles Irwin,	Sharpsburg,	Dorm. 335 Franklin.
Roderick, Richard Davis,	Hazleton,	3457 Walnut St.
Roethke, Rudolph Walter,	Chilton, Wis.,	3815 Spruce St.
Schneller, John Schatz, B. S. Muhlenberg),	Catasauqua,	3610 Walnut St.
Seidel, Victor Israel,	Philadelphia,	1512 Susquehanna Av.
Shapiro, Charles,	do.	904 S. 51st St.
Shear, Lewis Maurice,	Lancaster,	1100 Brown St.
Shelley, Isaac High,	Ambler,	Dorm. 22 Memorial.
Shields, Ellwood Emlen,	Germantown,	[412 School Lane.]
Shull, Joseph Rush,	Lincolnton, N. C.,	3340 Chestnut St.
Shultz, Charles Lytle,	Spruce Creek,	3945 Baltimore Ave.
Smith, John, Jr.,	Mahanoy City,	Dorm. 20 Coxe.
Smith, J. Shober, A. B. (Mount Union),	Steubenville, Ohio,	3601 Locust St.
Speer, William Henry,	Wilmington, Del.,	3610 Walnut St.
Sprowl, Frederic Good,	Warren, Ind.,	Dorm. 143 Lippincott.
Steckel, Harry Arthur,	Trenton, N. J.,	1839 N. 31st St.
Stewart, Audley Durand, A. B. (Westminster),	New Wilmington,	3731 Spruce St.
Stewart, Lever Flegal,	Clearfield,	Dorm. 117 Mc Kean.
Striegel, John George,	Pottsville,	3815 Spruce St.
Sumner, Robert Ernest,	Fletcher, N. C.,	3340 Chestnut St.
Swain, Dwight Moulton,	Malvern, Iowa,	3601 Locust St.
Thompson, Lloyd LeGrand, A. B. (Grove City),	North Hope,	3805 Locust St.
Tilton, Walter Sterling,	Farmingdale, N. J.,	225 S. 37th St.
Town, Edwin Cunningham,	Narbeth,	3711 Walnut St.
Trager, Herman,	Philadelphia,	736 S. 4th St.
Urbina, Juan Francisco,	Granada, Nicaragua,	3419 Walnut St.
B. S. and L. (Granada Coll.),	C. A.,	
Van Wert, Floyd Lee,	New Castle,	3805 Locust St.
Watson, Walter,	Newbern, N. C.,	3340 Chestnut St.
Welliver, William Evan,	Bloomsburg,	3815 Spruce St.
Wenger, John Marshall,	Brownstown,	3340 Walnut St.
Whitham, Lloyd Bankson,	Philadelphia,	5213 Greene St.
Wiggins, John Carroll, A. B. (North Carolina),	Suffolk, Va.,	Dorm. 318 Leidy.
Wilkes, LeRoy Augustus,	Philadelphia,	3614 Walnut St.
Wilson, Constant Penn, Jr.,	Ft. Smith, Ark.,	Dorm. 10 Rodney
B. S. A. (Arkansas),		
Wilson, Homer Tong, Jr.,	San Antonio, Texas,	3234 Chestnut St.
Wood, Percy Hoxie,	Memphis, Tenn.,	3533 Locust St.

## SECOND-YEAR CLASS.

Name.	Residence.	City Address.
Abramovitz, Max,	Philadelphia,	733 Sears St.
Albrecht, Herman Emil,	do.	4133 Girard Ave.
Alexander, Robert Julian,	Salt Lake City, Utah,	5131 DeLancey St.
Andres, John Henry, Jr.,	Bloomsburg,	3815 Spruce St.
Armstrong, James Irons,	Marshallton, Del.,	305 S. 39th St.
Baird, Homer Dale,	Wilkinsburg,	3457 Walnut St.
Baradofsky, Joseph,	Philadelphia,	332 League St.
Batdorf, Claude Wellington,	Harrisburg,	3743 Spruce St.
Bean, James Robbins,	Ashbourne,	[Box 48].
Beckwith, Robert Payne,	Plymouth,	Dorm. 30 Wilson.
Berens, Conrad, Jr.,	Philadelphia,	4232 Chestnut St.
Birdsall, Joseph Cooper,	S. Starksboro, Vt.,	223 S. 33d St.
A. B. (Haverford),		
Bixby, Edward Welles,	Wilkesbarre,	Dorm. 107 Leidy.
A. B. (Princeton),		
Block, Frank Benton,	Philadelphia,	1545 N. 6th St.
Boudart, Prosper Joseph, Jr.,	Chester,	[817 Edgmont Ave.]
B. S. (Penna. Military Coll.),		
Bowen, Albert,	Rochester, N. Y.,	300 S. 36th St.
A. B. (Rochester),		
Bowman, Paul Newkirk,	Reading,	Dorm. 42 Memorial.
Bradford, Mark Averill,	Claирton,	3815 Spruce St.
Brown, Evan Inkerman,	Buena Vista,	Dorm. 308 Brooks.
Buchanan, John Ure, Jr.,	Youngstown, Ohio,	Dorm. 306 Brooks.
B. S. (Penna. Military Coll.),		
Canning, Austin James,	S. Bethlehem,	Dorm. 433 Class of '87.
Carroll, Joseph Peter,	Philadelphia,	2163 N. 11th St.
Casselman, Arthur Jay,	Camden, N. J.,	[317 Penn St.]
Cater, Charles Columbus, Jr.,	Atlanta, Ga.,	26 N. 38th St.
B. A. (Atlanta),		
Chapman, John Patrick,	Watertown, N. Y.,	3473 Sansom St.
Clark, Solon Worth,	Economy, Ind.,	Dorm. 430 Class of '87.
Crawford, Stanley Ertest,	Pittsburg,	3641 Locust
Croll, Walter Lewis,	Bryn Mawr.	
A. B. (Haverford),		
Cronson, Jacob,	Philadelphia,	6147 Sansom St.
Davis, Emmett,	Glassport,	3801 Spruce St.
Draper, Edgar Arthur,	Philadelphia,	2109 Fitzwater St.
Evans, William Benedict,	Chester,	[1215 Edgmont Ave.]
Eynon, John Schofield,	Pittsburg,	3815 Spruce St.
Ferrier, Paul Alexander,	Tarkio, Mo.,	223 S. 38th St.
A. B. (Tarkio),		
Flynn, Charles Watts, Jr.,	Port Allen, La.,	3457 Walnut St.
B. S. (Louisiana State Univ.),		
Flynn, Theobald Matthew M.,	Erie,	3408 Sansom St.
Galbreath, John Alexander,	Lincoln University,	755 S. 19th St.
B. S. (Princeton),		
A. B. (Lincoln),		
Gardner, Clifton,	S. Swansea, Mass.,	Dorm. 348 McKean.

## DEPARTMENT OF MEDICINE.

Name.	Residence.	City Address.
Gerhard, Arthur Howell, A. B. (Pennsylvania),	Philadelphia,	Overbrook Ave., below 57th St.
Gindy, Fahmy, A. B. (Assiut Training Coll.),	Assiut, Egypt,	225 S. 33d St
Glenn, Robert Alexander,		
Goff, Byron Heazelton, B. S. (Pennsylvania),	Philadelphia, Pittsburg,	2927 Girard Ave. Dorm. 31 Coxe.
Goldstein, Harry Reuben,	do.	Dorm. 437 Baird.
Gotwals, John Elmer,	Yerkes,	115 S. 34th St.
Groblewski, Casimir Charles,	Plymouth,	Dorm. 30 Rodney.
Haines, Wilbur Hamilton, B. S. (Haverford),	Haverford,	Dorm. 22 Bodine.
Hajj, Nesib Michael, El-	Shenandoah,	3703 Woodland Ave.
Halprin, Abram,	Philadelphia,	4906 Lancaster Ave.
Hamrick, Martin Passmore,	Anahei, Cal.,	1126 Spruce St.
Hanley, Paul Dawson,	Pottstown,	3615 Locust St.
Harmon, Herbert Thurlow,	Belfast, Me.,	2016 Race St.
Hawk, George, William, B. S. (Bucknell),	Tower City,	2654 N. 31st St.
Hayden, Walter George,	Pittsburg,	Dorm. 32 Coxe.
Henry, Edward Glenn,	Tionesta,	215 DeKalb Sq.
Hess, Ammon Gross, B. S. (Bucknell),	Manheim,	3305 Walnut St.
Hess, Elmer,	Millville, N. J.,	3739 Spruce St.
Hess, George Hibbs,	Uniontown,	3713 Locust St.
Hickey, Joseph Garrett, D. D. S. (Pennsylvania),	Philadelphia,	1203 S. 46th St.
Hill, Frederick Edgar,	Trenton, N. J.,	3253 Sansom St.
Hoon, LeRoy, B. S. (Bucknell),	Monongahela,	3731 Locust St.
John, Rutherford Lewis, B. S. (Pennsylvania),	Media,	Dorm. 23 Memorial.
Joyce, Howard Simpson,	Steubenville, Ohio,	3916 Pine St.
Kech, Augustus Sheridan, B. S. (Bucknell),	Snow Shoe,	3702 Locust St.
Kennedy, Foster Harris,	Williamsport,	Dorm. 33 Rodney.
Kinloch, Henry Sachtleben,	Charleston, S. C.,	Dorm. 36 Morgan.
Kitchen, Philip Gordon, B. S. (Penn. Military Coll.),	Germantown,	[449 Locust Ave.]
Klotz, Fred Guth, A. B. (Princeton),	Northampton,	3733 Locust St.
Knauber, Leo Moltke,	Newtown,	3733 Locust St.
Krebs, Stanley Aaron,	Mahanoy City,	Dorm. 225 Baldwin.
Kremer, David Nathaniel,	Philadelphia,	5110 Baltimore Ave.
Krick, William Fritz,	Sinking Spring,	3743 Spruce St.
Leavitt, Frederic Headley,	Trenton, N. J.,	Dorm. 330 Franklin.
Leech, Archie Wallace, A. B. (Geneva),	New Sheffield,	219 S. 33d St.
Lehmann, John Raymond, A. B. (Wooster),	Springdale, Ohio,	Dorm. 431 Class of '87.
Lowry, Walter Thompson, A. B. (Grove City),	Butler,	3721 Locust St.

Name.	Residence.	City Address.
McClintock, Andrew Toled,	Wilkesbarre,	Dorm. 105 Leidy.
A. B. (Princeton),		
McCloskey, Edward William,	Philadelphia,	Dorm. 249 Carruth.
B. S. (Pennsylvania),		
McCormick, Earl V.,	Greensburg,	3607 Locust St.
McCormick, William Henry,	Perth Amboy, N. J.,	Dorm. 31 Morgan Jr.,
McEntee, Bernard Joseph,	Steelton,	2035 N. 22d St.
A. B. (Mt. St. Mary),		
McHugh, William Armstead,	Uniontown,	Hotel Powelton, 40th and Filbert Sts.
Jr.,		
McIntire, Benjamin Meredith,	Philadelphia,	4135 Chestnut St.
MacAskie, Harold Lathrop,	Scranton,	3723 Locust St.
A. B. (Lafayette),		
Macfarlan, Donald,	Philadelphia,	1805 Chestnut St.
B. S. (Pennsylvania),		
Macfarlan, Douglas,	do.	1805 Chestnut St.
B. S. (Pennsylvania),		
MacFarland, James, Jr.,	Burlington, N. J.,	Dorm. 366 Baird.
Manier, John Owsley,	Nashville, Tenn.,	Dorm. 501 Baldwin.
A. B. (Vanderbilt),		
Mannix, Timothy Fawcett,	New York, N. Y.,	Dorm. 51 E. F. Smith.
Margolies, Michael,	West Chester,	1508 S. 52d St.
Marks, William LeRoy,	Valencia,	3733 Spruce St.
Meyerhoff, Irwin Silberblatt,	Coatesville,	1803 N. 17th St.
Middleton, William Shainline,	Norristown,	[530] Buttonwood St.]
Miller, Thomas Grier,	Statesville, N. C.,	3601 Locust St.
A. B. (North Carolina),		
Monahan, John Sylvester,	Shenandoah,	3733 Locust St.
Mongan, James Gerald,	Dunmore,	3617 Locust St.
Moore, Fontaine Bruce,	Helena, Ark.,	3533 Locust St.
Mulherin, Francis Xavier,	Augusta, Ga.,	Dorm. 21 E. F. Smith.
A. B. (Coll. of Sacred Heart),		
Narr, Frederick Conrad,	Philadelphia,	1820 S. 12th St.
Newmayer, Harry,	do.	2007 N. 33d St.
Nunn, Sylvanus James,	Orange, N. J.,	209 S. 33d St.
Nutt, John Budd,	Williamsport,	Dorm. 105 Leidy.
A. B. (Princeton),		
Oast, Samuel Poindexter, Jr.,	Portsmouth, Va.,	Dorm. 410 Leidy.
Oliensis, Abraham Elijah,	Philadelphia,	1137 N. Union St.
O'Neil, James Williams,	Fall River, Mass.,	3706 Walnut St.
O'Neill, Francis Calistus,	Wilkesbarre,	Dorm. 309 Brooks.
Parry, John Rogers, Jr.,	Woodsfield, Ohio,	3706 Walnut St.
Parsons, Isaac Ivison,	Media.	
Peace, Elber Brodhead,	Port Norris, N. J.,	Dorm. 392 New York Alumni.
Pellett, Thomas Lawrence,	Hamburg, N. J.,	3801 Spruce St.
Pemberton, John deJarnette,	Raleigh, N. C.,	3617 Locust St.
B. A. (North Carolina),		
Pike, Charles Heyfield,	Boston, Mass.,	7242 Woodland Ave.
Pinckney, Frank Huger,	Philadelphia,	3619 Locust St.

## DEPARTMENT OF MEDICINE.

Name.	Residence.	City Address.
Piper, Edmund Brown, B. S. (Princeton),	Williamsport,	6300 Overbrook Ave.
Ratliff, Thomas Asbury, B. A. (Pennsylvania),	Dayton, Ohio,	3641 Locust St.
Reckord, Frank Frederick Dunott,	Harrisburg,	3743 Spruce St.
Reeves, John Franklin, B. A. (Pennsylvania),	Bridgeton, N. J.,	Dorm. 379 New York Alumni.
Roncovieri, Alfred, Jr.,	San Francisco, Cal.,	Dorm. 106 Leidy.
Root, Albert Smedes, B. S. (North Carolina),	Raleigh, N. C.,	3601 Locust St.
Ruben, Samuel Abraham,	Washington,	3200 Turner St.
Rullman, Walter Ames,	Annapolis, Md.,	Dorm. 325 Franklin.
Ruth, Aaron Leidy,	Conshohocken,	Dorm. 363 Baird.
Ryan, William John,	Philadelphia,	2035 N. 22d St.
Sanchez, Julian,	Camaguey, Cuba,	3735 Locust St.
Sawyer, William Alfred, B. S. (Pennsylvania),	Des Moines, Iowa.,	3400 Walnut St.
Scanlan, David Ward,	Atlantic City, N. J.,	Dorm. 386 Lippincott.
Scarlett, Hunter Watt, B. S. (Pennsylvania),	Erie,	Dorm. 22 Bodine.
Schaffner, Gerald Frederic,	Florence, Italy,	3730 Sansom St.
Schnabel, Truman Gross, A. B. (Lehigh),	Bethlehem,	3731 Locust St.
Schwartz, Philip Herman,	Hazelton,	3745 Spruce St.
Sloan, Henry Lee, A. B. (North Carolina),	Ingold, N. C.,	3601 Locust St.
Smiles, Clyde Jeffrey,	Pittston,	3457 Walnut St.
Smith, Charles Franklin,	Schofer,	6134 Vine St.
Smith, Frederick Ashworth,	Providence, R. I.,	Dorm. 342 McKean.
Smith, James Augustus,	Reading,	920 N. 42d St.
Smyth, William Arthur,	Avoca,	3815 Spruce St.
Steffler, Samuel Sheldon,	Pittsburg,	Dorm. 234 Baird.
Stein, Harry Charles,	Poughkeepsie, N. Y.	1810 N. 31st St.
Suarez, José Manuel,	Ponce, Porto Rico,	Dorm. 12 Bishop White.
Swalm, William Albert,	Philadelphia,	2548 N. 8th St..
Sweeney, Leon Gabriel,	Wilkesbarre,	Dorm. 32 Rodney
Thompson, Edward Gilmer, A. B. (Vanderbilt),	Marianna, Ark.,	Dorm. 501 Baldwin.
Throne, James Elwood,	York,	3703 Woodland Ave.
Tobey, Franklin Joseph,	Brockton, Mass.,	3610 Walnut St.
Updegrove, Harvey Claude, A. B. (Lafayette),	Easton,	3731 Locust St.
Webb, Lanphear Wesley, Jr.,	Philadelphia,	1426 Diamond St.
Wilson, George,	Erie,	Dorm. 230 Craig.
Wilson, Luther Elgin, B. S. (Pennsylvania),	Birmingham, Ala.,	111 S. 34th St.
Winslow, Harry Charles,	Bennezette,	215 DeKalb Sq.
Yeager, Clark Harvey,	Plymouth,	3607 Locust St.
Young, William James,	Boston, Mass.,	Franklin Field.

## FIRST-YEAR CLASS.

Name.	Residence.	City Address.
Albright, Markley Connel, A. B. (Gettysburg),	Hatfield.	
Alexander, John Harrison,	New Castle,	3309 Walnut St.
Arevalo, Gilberto C.,	Ginotepe, Nicaragua	3342 Walnut St.
C. A.,		
Artman, Edward Louis, Jr.,	Philadelphia,	1432 N. 17th St.
Bailey, Harry Francis,	Monongahela,	3323 Walnut St.
Bancroft, John Walter, Ph. B. (Franklin and Marshall),	Altoona,	3739 Spruce St.
Barnes, William Henry,	Philadelphia,	1931 Filbert St.
Barry, Francis Raymond,	Derby, Conn.,	3336 Chestnut St.
Bell, Howard Homer,	Lewistown,	3610 Locust St.
Boles, Russell Sage,	Ardmore.	
Brachman, David Simon,	Philadelphia,	2130 South St.
Bradner, Morris Renfrew,	Warwick, N. Y.,	Dorm. 248 Carruth.
Bromer, Ralph Shepherd, B. A. (Yale),	Schwenksville,	300 S. 36th St.
Brown, Henry Paul, Jr.,	Germantown,	[128 W. Upsilon St.]
Burleigh, Charles Carroll,	Merchantville, N. J.,	Dorm. 14 Rodney.
Cabrera, Esteban Garcia, Jr.,	San Juan, Porto Rico,	3704 Spruce St.
Cain, Lawrence Eli, A. B. (Delaware),	Felton, Del.,	3708 Brown St.
Campbell, Stephen,	Philadelphia,	1541 S. Broad St.
Cannon, Raymond Joseph Aloysius,	Allentown,	2319 N. Howard St.
Carley, Arthur Ward,	Ayer, Mass.,	268 S. 38th St.
Cohen, Leon Solis-	Philadelphia,	1525 Walnut St.
Colgan, Walter John,	Bridgeport, Conn.,	Dorm. 35 Memorial.
Collins, Arthur Aldridge, A. B. (Lincoln),	Oxford,	3265 Sansom St.
Comas, Manuel Calero, Jr.,	Guantanamo, Cuba,	3317 Walnut St.
Cook, Thomas Wood, Jr.,	Selma, Ohio,	1700 N. 52d St.
Cruz, Martin Ratillo, A. B. (Manila),	Bustos, Phillipine Is.	3612 Locust St.
Darrah, Leon Calvin,	Reading,	3603 Locust St.
Denelsbeck, Julius Otis,	Trenton, N. J.,	3253 Sansom St.
Dickson, John McCrea, B. S. (Gettysburg),	Gettysburg,	3708 Spruce St.
Dietrich, Paul Henry,	Kutztown,	122 S. 33d St.
Diller, Isaac Slaymaker, A. B. (Franklin and Marshall),	Lancaster,	3502 Spg. Garden St.
Diven, John, A. B. (Indiana),	Anderson, Ind.,	Dorm. 362 Baird.
Doe, Charles Herbert,	Philadelphia,	4509 Sansom St.
Donlan, Francis Albert Ben- nett,	Shamokin,	Dorm. 51 Memorial.
Donovan, Joseph Francis,	Port Richmond, N. Y.	3803 Spruce St.
Drinker, Cecil Kent, B. S. (Haverford),	South Bethlehem,	20 S. 21st St.

## DEPARTMENT OF MEDICINE.

Name.	Residence.	City Address.
Edwards, Thomson Ford, Jr., Falcon, Gustav A.,	Philadelphia, San Buenaventura, Coah, Mexico,	906 S. 47th St. 225 S. 33d St.
Fields, Sterling Otelius, Freitas, Augusto Gabriel, de, Frick, John Howard, Gagion, Thomas Reade, Gilmore, James Lee, A. B. (Westminster),	Newport News, Va., São Paulo, Brazil, Philadelphia, Wilkesbarre, Turtle Creek,	26 N. 38th St. 215 S. 33d St. 4358 Germantown Ave. Dorm. 33 Bishop White. 3731 Spruce St.
Goldberg, Leo, Graham, Reginald David, Graves, Richard Alexander, Groh, John Lick, Guerinot, Albert John, Gutierrez, Carlos Alberto, Hanson, Edward Kelly, Hawk, David Jackson, B. S. (Bucknell),	Philadelphia, West Duluth, Minn., Presque Isle, Me., Lebanon, Rochester, N. Y., San José, Costa Rica, Perth Amboy, N. J., Tower City,	913 Ritner St. 116 S. 45th St. 216 S. 37th St. 3817 Locust St. 3812 Locust St. 3324 Woodland Ave. Dorm. 11 E. F. Smith. 2654 N. 31st St.
Heilman, Adam George, Ph. B. (Franklin and Marshall),	Lebanon,	Dorm. 35 E. F. Smith
Heim, John Daniel, A. B. (Franklin and Marshall),	New Providence,	24 S. 34th St.
Hirsch, Otto Christian, Hopkinson, Richard Dale, How, Harold Waldron, Howell, William Horace, Hoyle, William Hayes,	Philadelphia, do., New York, N.Y., Morrisville. West Somerville, Mass.,	2563 Germantown Ave. 1424 Spruce St. Dorm. 343 McKean. 268 S. 38th St.
Hunter, Edward Raymond, Jacobsen, Rafael, B. S. and L. (Havana Institute),	Delanco, N. J. Havana, Cuba, Philadelphia, Plymouth, Atco, N. J., Lanes Mills, Harleysville, Homestead, Logan, Ohio, Butler, Salt Lake City, Utah,	3711 Walnut St. 757 S. 5th St. 3705 Woodland Ave. 3236 Sansom St. 3741 Spruce St. 3605 Locust St. Dorm. 33 Morris. 2545 Brown St. 3737 Spruce St. 3743 Spruce St.
King, Clapham Price, King, Edward Ambrose, A. B. (St. Francis Xavier),	Annapolis, Md., Scottdale,	4443 Sansom St. [404 S. Chestnut St.]
Klauder, Joseph Victor, Kleinhaus, Paul Howard, Ph. B. (Lafayette),	Philadelphia, Easton,	3328 N. Broad St. 3719 Locust St.
Kochenour, Paul Gerhart, Kroh, Laird Franklin, Ph. B. (Grove City),	Harrisburg, Rural Valley,	3725 Spruce St. 3739 Spruce St.
Kunitomo, Nobuya,	Tsuchiura, Japan,	3610 Walnut St.

Name.	Residence.	City Address.
Larned, Samuel Francis,	Syracuse, N. Y.,	217 S. 33d St.
Lebkicher, Wellington Alfred,	Reading,	Dorm. 409 Leidy.
Lewis, John Francis, Jr.,	Philadelphia,	6024 Haverford Ave.
A. B. (St Joseph),		
Lick, Maxwell John,	Albion,	3608 Walnut St.
A. B. (Allegheny),		
Likes, Lanning Elbridge,	Des Moines, Iowa,	Dorm. 47 Morris.
Llewellyn, Thomas Henry,	Paget, W. Bermuda,	3743 Spruce St.
B. A. (Mt. Allison),		
Lowe, Eugene Clayton,	Key West, Fla.,	3269 Woodland Ave.
Lowenthal, Abraham Isador,	Philadelphia,	1207 Belmont Ave.
Lupin, Edward Emanuel,	do.	1247 S. 7th St.
McCain, Gilpin Montieth,	Kittanning,	3721 Locust St.
B. S. (Washington and Jefferson),		
McCord, Clinton Preston,	Elverson,	3610 Locust St.
McGinley, Joseph Leo,	Wilkesbarre,	3704 Locust St.
McHenry, Robert Newcomb,	Millville, N. J.,	Dorm. 432 Class of '87.
Magoffin, Montrose Bovard,	Mercer,	Dorm. 16 Bodine.
A. B. (Princeton),		
Manzella, Joseph Anthony,	Brooklyn, N. Y.,	3338 Walnut St.
Markel, Ralph Montgomery,	Sunbury,	Dorm. 35 E. F. Smith.
Ph. B. (Franklin and Marshall),		
Marks, Philip Edward,	Braddock,	3721 Locust St.
A. B. (Washington and Jefferson),		
Marshall, Edward Humphrey, Butler,		3721 Locust St.
Ph. B. (Grove City),		
Martin, Sergeant Price,	Philadelphia,	3328 Walnut St.
Mayer, William Henry,	Pittsburg,	3223 Sansom St.
Millikin, Joseph Pancoast,	Waynesburg,	3727 Spruce St.
Ph. B. (Waynesburg),		
Miranda, Henrique Oswaldo,	Para, Brazil,	3338 Walnut St.
de,		
Monaghan, William Anthony,	Bristol, Conn.,	Dorm. 151 N.Y. Alumni.
Mumma, Harry Getz,	Brownstown,	3449 Walnut St.
Murdock, Dennis Ray,	Waynesburg,	3727 Spruce St.
Newcomet, Harry Isaac,	Reading,	3603 Locust St.
O'Boyle, Cyril Patrick,	Scranton,	3909 Pine St.
O'Brien, Leo Sullivan,	Rochester, N. Y.,	208 S. 33d St.
A. B. (Rochester),		
Paiva, Benedicto Avila,	São Paulo, Brazil,	215 S. 33d St.
Pearl, Jacob,	Philadelphia,	160 Walnut Lane, Wis-
Peters, Charles Orley,	Albion,	sahickon.
A. B. (Allegheny),		3608 Walnut St.
Pike, Charles Edward,	Philadelphia,	7242 Woodland Ave.
Presper, Elmer John,	do.	2307 Frankford Ave.
Reeves, Rufus Sargent,	do.	1525 Spruce St.
B. S. (Pennsylvania),		
Reymond, Robert Percy,	Baton Rouge, La.,	3438 Walnut St.
A. B. (Louisiana State),		
Rhode, Solon Lafayette,	Kutztown,	Dorm. 33 Morgan.

## DEPARTMENT OF MEDICINE.

Name.	Residence.	City Address.
Rickert, Wilbur Paul,	Harrisburg,	Dorm. 57 Memorial.
Rockwell, George Ward,	Akron, Ohio,	Dorm. 416 Franklin.
Ph. D. (Pennsylvania),		
Rosenblum, Alex Morton,	Youngstown, Ohio,	Dorm. 346 McKean.
Rothrock, Arthur Crawford,	Reedsville,	3709 Locust St.
Rothschild, Norman Stanley,	Philadelphia,	1832 N. 17th St.
Rubin, Harry,	Dunnellon, Fla.,	3608 Locust St.
Russell, Leslie Crawford,	Newark, N. J.,	Dorm. 403 Brooks.
Scanlon, Edward Joseph,	Philadelphia,	1647 Federal St.
A. B. (St. Joseph),		
Schildkraut, Jacob Max,	Trenton, N. J.,	[601 Lamberton St.]
Schmitz, Edgar F.,	St. Louis, Mo.,	Dorm. 115 Foerderer.
Segal, Louis,	Philadelphia,	631 Ritner St.
Semmelrock, William Henry,	Pittsburg,	Dorm. 57 Coxe.
Shivers, Charles Hendry de Turck,	Atlantic City, N. J.,	Dorm. 318 Leidy.
Shookers, Tobias Cletus,	Mountville,	3350 Walnut St.
Simpson, John Christopher,	Philadelphia,	805 N. 11th St.
Simpson, Sumner Clelland,	McKeesport,	3605 Locust St.
Sisney, Thomas LaVere,	Boyers,	3739 Spruce St.
A. B. (Grove City),		
Smith, Daniel Arthur, Jr.,	Newport, R. I.,	726 S. 19th St.
Smock, Irwin Bradfield,	Philadelphia,	3330 Chestnut St.
Souza, Roque, Jr.,	Guatemala,	3713 Locust St.
B. S. and L. (Instituto Nacional Central de Varones),		
Stansfield, Oliver Holt,	Amsterdam, N. Y.,	Dorm. 49 Coxe.
Stevenson, William Wyckoff,	Trenton, N. J.,	Dorm. 41 Rodney.
Stoner, Carl Balfour	Des Moines, Iowa,	Dorm. 117 McKean.
Strode, George King,	West Chester,	[314 S. Walnut St.]
B. S. (Haverford),		
Sweeney, John Francis, Jr.,	Buffalo, N. Y.,	Dorm. 33 Bodine.
Szlupas, Keistutis,	Scranton,	Dorm. 408 Leidy.
Thomas, Alfred Robert, Jr.,	Philadelphia,	3411 N. 15th St.
Thomas, David Wesley,	Weedville,	215 DeKalb Sq.
Tidd, Charles H.,	Effort,	[144 Edgewood Ave., Chester.]
Toland, John Hart,	Philadelphia,	2526 S. Broad St
A. B. (St. Joseph),		
Vogt, David Mays,	Prescott,	3337 Walnut St.
Wahl, John Carl,	Scranton,	Dorm. 54 Morris.
Walker, Ralph Ward,	Butler,	Dorm. 32 Wilson.
Walter, Max Johannes,	Philadelphia,	1711 Green St.
Weddell, William Larimer,	Boston,	3727 Spruce St.
Wells, James Ralston,	Philadelphia,	754 N. 4th St.
Whitaker, Romulus Earl,	Kinston, N. C.,	3815 Spruce St.
B. S. (Davidson),		
Wilbur, Daniel Webster,	Pine Plains, N. Y.,	3406 Sansom St.
Wolferth, Charles Christian,	Clarksboro, N. J.,	Dorm. 413 Franklin.
A. B. (Princeton),		
Wright, William Minniss,	Union City,	Dorm. 46 E. F. Smith.
Zinsser, Harry Frederick,	Pittsburg,	Dorm. 145 Carruth.

## SPECIAL STUDENTS.

Name.	Residence.	City Address.
Lee, Bieyao Tsanchi, B. C. E. (Univ. of Tientsin),	Wuchow, China,	3717 Spruce St.
Wilder, Raymond Sargent, A. B., M. D. (Harvard),	Cambridge, Mass.,	3727 Locust St.

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## SUMMARY.

Post-graduate Students, Spring Course, 1907.....	7
Students of the Fourth-year Class .....	113
Students of the Third-year Class .....	134
Students of the Second-year Class .....	150
Students of the First-year Class.....	153
Special Students .....	2
<b>Total.....</b>	<b>559</b>

## DEPARTMENT OF DENTISTRY.

## THIRD-YEAR CLASS.

Name.	Residence.	City Address.
Acosta, Eduardo,	Camaguey, Cuba,	3730 Walnut St.
Allison, Henry Kiver,	Christchurch, N. Z.,	Dorm. 50 Morris.
Andrews, Joseph Elliott,	Wellsville, Ohio,	3723 Spruce St.
Angulo, Luis Raul,	San Vincente, El Salvador, C. A.,	221 S. 33d St.
Ashelman, Samuel Freas,	Benton,	223 S. 33d St.
Balderton, George Egerton,	Vancouver, B. C.,	126 S. 34th St.
Barrett, Joseph James,	Syracuse, N. Y.,	3612 Walnut St.
Beach, Irvin Halsey,	Jersey City, N. J.,	3643 Woodland Ave.
Beauchamp, Charles Wesley,	Westover, Md.,	3467 Chestnut St.
Beckett, Herbert Patrick,	Fall River, Mass.,	3714 Locust St.
Billings, Harry LeRoy,	Springfield, Mass.,	3730 Walnut St.
Blum, Theodor,	Vienna, Austria,	109 S. 34th St.
Boland, David Albert,	Philadelphia,	824 N. 5th St.
B. S. (Pennsylvania),		
Bor, Hendrik Hermann	Utrecht, Holland,	3262 Chestnut St.
Theodorus Ariè,		
Brachman, Herman Joseph,	Philadelphia,	2130 South St.
Bristol, Rolla Jay,	Bristol, Vt.,	20 N. 36th St.
Broughton, Frank William	Sydney, Australia,	3420 Sansom St.
Walford, B. D. S. (Sydney),		
Brown, Edward Leo,	Tunkhannock,	3730 Walnut St.
Brown, William Allen,	Key West, Fla.,	3730 Walnut St.
Bull, Reginald Arthur,	Sydney, Australia,	3406 Sansom St.
Bushong, Stuart Franklin,	Brooklyn, N. Y.,	3239 Sansom St.
Cairns, Frank Aloysius,	Newark, N. J.,	3305 Walnut St.
Calhoun, William Henry,	Bridgeport, Conn.,	Dorm. 45 Memorial.
Caminha, Brenno Amaro,	Uruguayana, Brazil,	3222 Sansom St.
Carrera, Luis de la,	Santiago, Chile,	Dorm. 122 McKean.
B. Ph. Sc., Dentista (Chile),		
Cerda, Gonzalo de la,	Retalhuleu, Guatamala, C. A.,	117 S. 34th St.
Chapman, Frank Augustus,	S. Glenn Falls, N. Y.,	3435 Lancaster Ave.
Clifford, William David,	Ogdensburg, N. Y.,	20 N. 36th St.
Colborn, Clarence Roth,	Ashley,	3612 Walnut St.
Collard, Henri,	Krommenie, Holland,	Dorm. 24 Morgan.
Cosgrove, John Irving,	Sydney, Australia,	3704 Baring St.
Cragin, Arthur Mantor,	Kingston, N. Y.,	3612 Walnut St.
Crockett, Lawrence Charles,	Northampton, England,	3325 Chestnut St.
L.D.S. (England),	Hamilton, Brisbane, Australia,	202 S. 37th St.
Dalrymple, John Hamilton,	Dunmore,	Dorm. 45 Memorial.
Davis, Harold Evans,	Hudson, N. Y.,	Dorm. 221 McKean.
Dayton, Charles Richard,		

Name.	Residence.	City Address.
Demarquette, Jacques Colin Frederic, D. E., D. P., Chirurgien Dentiste (Paris),	Paris, France,	3717 Spruce St.
Deschler, George Lancelot, Devine, Edmund Atwell,	Invercargill, N. Z., Trainer.	3404 Sansom St.
Doran, Charles Henry, Ettenson, Herman,	Danbury, Conn., Brooklyn, N. Y.,	3258 Chestnut St. 3249 Locust St.
Faulkner, Niles Maxon, Feely, James Francis, Freitas, Pedro Baptista Gomes de,	Oneida, N. Y., Philadelphia,	20 N. 36th St. 2327 Catharine St.
Frost, William John, Galbreath, Donald Lindsay, Gavin, John Joseph, Gick, Hubert George, D. E., D. P., Chirurgien Dentiste (Paris),	Pelotas, Brazil, S.A., Springfield, Mass., Hanover, Germany, Cohoes, N. Y., Paris, France,	3338 Walnut St. 3730 Walnut St. 3413 Walnut St. 205 S. 33d St. 3739 Spruce St.
Gingras, Ivar Charles, Girard, Ernest Emil, Medicin Chirurgien Dentiste (Suisse),	Turner Falls, Mass., Biel, Switzerland,	3730 Walnut St. 3222 Sansom St.
Girardin, Maurice Charles, D. E., D. P., Chirurgien Dentiste (Paris),	Paris, France,	3717 Spruce St.
Gitt, Chester Nathaniel, Godfrey, Edward Carl, Greenwell, Earl Ellsworth, Grosse, Edward Henry, B. D. S. (Sydney),	Littlestown, Dover, N. H., Ogden, Utah, Sydney, Australia,	3467 Chestnut St. Dorm. 221 McKean. 3346 Lancaster Ave. 3730 Sansom St.
Gunn, Gordon Melton, Hallander, Harald Anders Jean, Tandlage (Copenhagen),	Timaru, N. Z., Horsens, Denmark,	109 S. 34th St. 3611 Locust St.
Hamilton, Fred Browning, Harris, Michael Benedict, Hartranft, John Leon, Heintz, William John, Hess, Jerome Gross, Hoot, William Irving, Horahan, William Henry, Hordern, Herbert Vivian, Jenney, Rollin Dewey, Johnson, James Hoffer, Jones, Edward George, Jones, John Watkins, Keane, James Henry, Keim, Carl Fred, King, J. Craig, Kirkpatrick, Harry McDonald,	Scranton, Newark, N. J., Canton, Utica, N. Y., Manheim, Rochester, N. Y., North Adams, Mass., Sydney, Australia, Bennington, Vt., Carbondale, Col., Bowral, Australia, Scranton, Danbury, Conn., Harrisburg, Reynoldsville, Highspire,	Dorm. 44 Memorial. Dorm. 22 Bishop White. 3467 Chestnut St. 20 N. 36th St. 3305 Walnut St. 207 S. 33d St. 3714 Locust St. 3537 Locust St. Dorm. 4 Morris. 3341 Woodland Ave. 3271 Locust St. 3730 Walnut St. 3258 Chestnut St. 3467 Chestnut St. 3326 Walnut St. 3467 Chestnut St.
Krause, Eugene Kienzle, Kuttner, Joseph,	Philadelphia, New York, N. Y.,	4922 Cedar Ave. 3249 Locust St.

Name.	Residence.	City Address.
Kuyk, Jan Willem van, Lauder, Edwin George, Jr., Llewellyn, Lionel Jeffrey, Loeb, Morton Joseph, Loureiro, Fabio Leite, Madigan, George Francis, Mallon, Charles Augustus, Marron, Samuel Hugh, L. D. S. (Melbourne), Marshall, Frank, B. D. S. (Sydney), Maslen, James Carr, Mikola, William J., Miller, Israel Samuel, Morris, Edwin Royle, Nachtigall, Karl, Zahnarzt (Germany), Neagley, Lewis Edwin, O'Curry, Eugene John, O'Farrell, Joseph Ignatius, O'Farrell, Joseph James, Olier, Carmelo,	The Hague, Holland, 3332 Lancaster Ave. Philadelphia, 3210 Race St. Braidwood, Australia, 3249 Sansom St. New Haven, Conn., 122 S. 34th St. Manaos, Brazil, 215 S. 33d St. Coxsackie, N. Y., 3612 Walnut St. Philadelphia, 1511 N. 17th St. Geelong, Australia, 214 S. 37th St.	
Paine, William Samuel, Percival, Seymour Thomas, Peters, Rollo Oliver, Pike, Isaac Smedley, Jr., Plata, Mitridores, Quigley, James Joseph, Reagan, Charles William, Robles, Rafael, Jr.,	Sydney, Australia, 3420 Sansom St.	
Rogers, William Harry, Ruempler, William John Charles, Zahnarzt (Germany), Ryan, Charles Hills,	Pittsfield, Mass., 3271 Sansom St. Paterson, N. J., Dorm. 10 E. F. Smith. Philadelphia, 1519 S. 6th St. Paterson, N. J., 15 N. 34th St. Darmstadt, 121 S. 34th St. Germany, 1201 N. 25th St. Milton, 215 S. 33d St. Buenos Aires, S. A., 3411 Walnut St. Buenos Aires, S. A., 3411 Walnut St. Cartagena, Colom- bia, S. A., 108 S. 33d St.	
Sanderson, Mortimer, Satchell, Glanville Kossuth, Scherer, John William, Scott, Joseph Wilbur, Seitz, Paul, D. E., D. P., Chirurgien Dentiste (Paris), Serre, George Norton, Smith, Arthur William, Smith, Walter Cornell, Snively, Norman Ray, Sobel, Samuel, Solas, Fulgence Lucien, D. E., D. P., Chirurgien Dentiste (Paris),	Ogden, Utah, 3330 Lancaster Ave. Pitman, N. J., 101 S. 33d St. Slatington, 3244 Sansom St. Media, Piura, Peru, S. A., 3441 Walnut St. Lee, Mass., 109 S. 34th St. St. Albans, Vt. Antigua, Guate- mala, C. A., 221 S. 33d St. Wheeling, W. Va., 3467 Chestnut St. Berlin, Germany, 122 S. 34th St.	
Lakeside, N. B., Canada, New York, N. Y., 5326 Greenway Ave. Sydney, Australia, 3406 Sansom St. East Orange, N. J., 3730 Walnut St. Ticonderoga, N. Y., 207 S. 33d St. Tuttlingen, Germany, 3350 Walnut St.	Dorm. 24 E. F. Smith.	
Danbury, Conn., 3733 Locust St. Rochester, N. Y., 225 S. 33d St. Watertown, N. Y., 207 S. 33d St. Altoona, 3326 Walnut St. New York, N. Y., 3714 Locust St. Sens, France, 3717 Spruce St.		

Name.	Residence.	City Address.
Soxhlet, Paul Victor,	Philadelphia,	Dorm. 34 E. F. Smith.
Stevens, Frederick Charles,	Vineland, N. J.,	3244 Sansom St.
Taylor, William Denton,	Newark, N. J.,	Dorm. 53 Morris.
Tebbutt, Edwin Spencer, L.D.S. (England),	Northampton, England,	3325 Chestnut St.
Wagg, Charles Edgar,	Manasquan, N. J.,	3612 Walnut St.
Warburton, Maynard Bruce,	Campbellsville,	225 S. 33d St.
Warner, Sydney Stark,	Wilkesbarre,	Dorm. 452 New York Alumni.
Watts, William,	Newark, N. J.,	3467 Chestnut St.
Wessner, George Alfred,	Allentown,	Dorm. 221 McKean.
Wheless, Robert Lunsford,	Dallas, Texas,	3314 Walnut St.
Wilcox, Thomas Lowry,	Philadelphia,	82 W. Johnson St., Gtn.
Wilkinson, Charles Henry,	Syracuse, N. Y.,	3314 Walnut St.
Wilkinson, William Jefferson,	Kangaroo Valley, Australia,	3404 Sansom St.
Wren, Edwin St. Clair,	Boyertown,	3467 Chestnut St.
Zimmermann, Adolphe, D. E., D. P., Chirurgien Dentiste (Paris),	Paris, France,	3222 Sansom St.

## SECOND-YEAR CLASS.

Abbott, Ernest Andrew,	N. Attleboro, Mass.,	Dorm. 375 Hopkinson.
A'Court, Frank Clifford,	Christchurch, N. Z.,	3730 Sansom St.
Applegate, Albert Milne,	Asbury Park, N. J.,	102 S. 33d St.
Arnold, Howard Bayles,	Morristown, N. J.,	3223 Sansom St.
Batemen, Henry Oxley,	Brooklyn, N. Y.,	123 S. 36th St.
Beams, Walter Albert,	Newark, N. J.,	3612 Walnut St.
Beck, Ber-ton Elmer,	Cogan House,	208 S. 37th St.
Behney, Byron Stanley,	Carlisle,	3737 Spruce St.
Bell, Thomas,	Auckland, N. Z.,	3332 Lancaster Ave.
Bender, Reinhardt Paul,	Paterson, N. J.,	3467 Chestnut St.
Bentley, Harvey Wilcox,	Salem, N. Y.,	3341 Woodland Ave.
Blumer, Gabriel Edward,	Syracuse, N. Y.,	3467 Chestnut St.
Burge, Cecil John,	Sydney, Australia,	109 S. 34th St.
Caldwell, George Worth- ington,	Philadelphia,	619 S. 48th St.
Campbell, Arthur Albion,	Claremont, N. H.,	Dorm. 49 Morris.
Carson, Robert Edward Vincent,	Philadelphia,	1131 S. 46th St.
Castro, Herman de,	Lima, Peru,	Dorm. 421 McKean.
Castro, Marco Tilio de,	Barranquilla, Colombia, S. A.,	25 N. 34th St.
Castro, Ruben Dario,	Heredia, Costa Rica,	3301 Walnut St.
Cheney, Howard Alonso.	Central America,	
Cloutier, Daniel Henry,	Watertown, N. Y.,	3612 Walnut St.
Colyer, George Clifford,	Woonsocket, R. I.,	3612 Walnut St.
Conran, James Jacob,	Freeport, N. Y.,	3730 Walnut St.
Criswell, James Carl,	Torrington, Conn.,	215 McAlpin St.
	West Grove,	3267 Sansom St.

## DEPARTMENT OF DENTISTRY.

Name.	Residence.	City Address.
Crowell, Eldon Lewis, Crowley, William James, Day, Laurence Bret, Dear, David Philip, Decker, William Clyde, Delgado, Luis Carlos,	Middletown, Conn., 3612 Walnut St. Bangor, Me., 202 S. 37th St. Adelaide, Australia, Dorm. 24 Coxe. Wollongong, Australia, 109 S. 34th St. Huntingdon, 122 S. 33d St. Cartagena, Colombia, 108 S. 33d St.	
DeLong, Clarence Stoudt, Egan, Charles Francis, Embler, Ralph, Fenn, Albert William Backwell, Friederich, Ernest Philip, Galvão, Henrique Feio,	Reading, Waterbury, Conn., Newburgh, N. Y., Southport, England, 3271 Locust St.	Dorm. 42 Memorial. 3314 Walnut St. Dorm. 438 Hopkinson.
Gierding, Ernest Charles, Giesecke, Max, Glaser, Karl, Goldsmith, Julius, Gould, Leslie Albert, Graham, Frank Hannibal, Graver, Milton Franklin,	Arnhem, Holland, Rio de Janeiro, Brazil, S. A., Belleville, N. J., Denver, Col., Newark, N. J., Reading, Watertown, N. Y., Sydney, Australia, Bath,	3262 Chestnut St. 3338 Walnut St. 3318 Walnut St. 3810 Powelton Ave. Dorm. 28 Morris. 218 S. 37th St. 3612 Walnut St. 3271 Locust St. Dorm. 311 Phillips Brooks.
Gunter, John Havelock,	Fredericton, N. B., Canada,	124 S. 34th St.
Haley, Robert Joseph, Hallenberg, Victor, Ham, Joseph Thomas, Hanna, Jacob Glen, Harkins, Cloyd Summerfield, Harrison, Forrest Mayes, Hart, Samuel Corinaldi,	Springfield, Mass., Fargo, N. D., Buenos Aires, S. A., Olympia, Wash., Philipsburg,	3612 Walnut St. Dorm. 54 Memorial. 4322 Market St. 3409 Walnut St. 3612 Walnut St.
Hasselt, Ludolph Theodorus Arend van, Haywood, Leo Paul, Hebert, Octave Napoleon, Heemskerk Dürker, Jan Herman van, Hennessy, Daniel John, Herder, Samuel, Hirtle, Jerome Evar,	Altoona, Montego Bay, Jamaica, W. I., The Hague, Holland,	3467 Chestnut St. 3223 Sansom St. 3336 Lancaster Ave.
Holmes, Harold Brainerd, Holton, Thomas Aloysius, Ivory, James Thomas, Kelley, Frank John, Kelly, Daniel Joseph, Kelly, William Carpenter, B. S. (Bucknell),	Wellington, N. Z., Cohoes, N. Y., Hilversum, Holland,	3332 Lancaster Ave. 3407 Walnut St. 3336 Lancaster Ave.
	Hoosick Falls, New York, N. Y., Mahone Bay, N. S., Canada,	3601 Sansom St. 2511 N. 33d St. 215 McAlpin St.
	West Winfield, N. Y., Philadelphia, Norwich, N. Y., S. Norwalk, Conn., Fall River, Mass., Lewisburg,	3271 Sansom St. 1717 N. 7th St. 126 S. 34th St. 3604 Walnut St. 3714 Locust St. 5251 Spruce St.

Name.	Residence.	City Address.
Ketcham, Stuart Theodore,	Stamford, Conn.,	3412 Sansom St.
Knopf, Isadore Harold,	Wallingford, Conn.,	209 S. 33d St.
Koch, Otto Paul,	The Hague, Holland,	3332 Lancaster Ave.
Koontz, Howard Samuel,	Woodsfield, Ohio,	3706 Walnut St.
Labarraque, y Arnaud Victor,	Guantanamo, Cuba,	111 S. 34th St.
Lash, Clarence Henry,	Loveland, Colo.,	3424 Sansom St.
Le Houillier, Emerson John,	Wallingford, Conn.,	3314 Walnut St.
Lewis, Charles Walter, Jr.,	Albany, N. Y.,	3730 Walnut St.
Lindstedt, Theodore Kent,	Greenwich, Conn.,	Dorm. 24 Rodney.
Litchfield, Murray Kingsley,	Christchurch, N. Z.,	216 DeKalb St.
Long, Millard Bean,	Camden, Me.,	3743 Spruce St.
Long, Orville Smith,	Wolf Hill, N. Y.,	223 S. 33d St.
McElhone, George Hill,	Sydney, Australia,	3271 Locust St.
Martin, Ernest Sidney,	Melbourne, Australia,	3706 Spruce St.
Meaney, Vincent Timothy,	Danbury, Conn.,	3612 Walnut St.
A. B. (Holy Cross),		
Meeker, Robert Wilson,	Plainfield, N. J.,	3314 Walnut St.
Meter, Frank William,	Rome, N. Y.,	126 S. 34th St.
Moffatt, William Harrison,	Binghamton, N. Y.,	3339 Woodland Ave.
Norton, Richard Henry, Jr.,	Somerville, Mass.,	3400 Walnut St.
Noyes, Byron Ellsworth,	Watertown, N. Y.,	3473 Sansom St.
Nutter, George Abel,	Orange, N. J.,	3612 Walnut St.
O'Brien, John Robert,	Olyphant,	Dorm. 40 Bishop White.
Paull, Wilton Colt,	Buffalo, N. Y.,	23 S. 34th St.
Pipes, Hugh Graham,	Presque Isle, Me.,	216 S. 37th St.
Pizarro, Edmundo,	Cartagena,	221 S. 38th St.
	Colombia, S. A.,	
Potts, Lemuel Eastburn,	Pottstown,	202 S. 37th St.
Pulver, Peter Carvey,	Penn Yan, N. Y.,	3805 Locust St.
Raffman, Abraham,	Bloomingdale, N. J.,	3608 Locust St.
Rapp, Ira Miller,	Lyon Station,	Dorm. 49 E. F. Smith.
Roberts, David Stephen,	Fort Edward, N. Y.,	3265 Chancellor St.
Sawyer, Samuel Rutherford,	Tuckerton, N. J.,	3339 Woodland Ave.
Scaglione, John Alexander,	Paris, France,	3257 Chancellor St.
M. D. (Rome),		
Schaffner, Gerald Frederic,	Florence, Italy,	3730 Sansom St.
Siegler, Frank Joseph,	Doylestown,	3615 Locust St.
Smith, David Scull,	Philadelphia,	3467 Chestnut St.
Smith, Edwin Reynolds,	Schenectady, N.Y.,	3341 Woodland Ave.
Smith, Frederick,	Newburgh, N. Y.,	Dorm. 375 Hopkinson.
Smith, Florentine Rolland,	Jersey City, N. J.,	Dorm. 45 Coxe.
Snyder, Charles Victor,	Lancaster,	Dorm. 378 Hopkinson.
Solis, Crocker Ernesto,	Guatemala City,	117 S. 34th St.
	Guatemala, C. A.,	
Stebbins, Arthur King,	Tacoma, Wash.,	3322 Woodland Ave.
Steeves, Simeon Aaron,	Moncton, N. B.,	124 S. 34th St.
	Canada,	
Stillwell, Edward Courtenay,	East Orange, N. J.,	Dorm. 24 Rodney.
Stoddard, Fred W.,	Loveland, Colo.,	3424 Sansom St.
Stoddard, Ralph Roswell,	Newington, Conn.,	3612 Walnut St.
Strous, William Everett,	Kingston,	122 S. 33d St.

Name.	Residence.	City Address.
Sutton, Rupert Ingram,	Masterton, N. Z.,	213 DeKalb St.
Talley, Dyer Beeler,	Syracuse, N. Y.,	3467 Chestnut St.
Taylor, George W.,	Ocean Grove, N. J.,	102 S. 33d St.
Thomas, Walter Dee,	Ogden, Utah,	3265 Chancellor St.
Thompson, Alva Clarke,	Winterport, Me.,	3627 Locust St.
Vandervoort, John Coe,	Paterson, N. J.,	Dorm. 13 Bishop White
Walsh, Charles Aloysius,	Wilkesbarre,	Dorm. 106 Leidy.
Weiler, John Leo,	Sherburne, N. Y.,	126 S. 34th St.
Weinberger, Joseph,	Passaic, N. J.,	3608 Locust St.
Whitcomb, Carroll Byington,	Greenwich, N. Y.,	3412 Sansom St.
Wilson, Charles Ralph,	Huntingdon,	3714 Locust St.
Winstone, Ernest Charles,	Auckland, N. Z.,	17 N. 34th St.
Zeliff, Cyrus V.,	Haledon, N. J.,	4303 Westminster Ave.

## FIRST-YEAR CLASS.

Allen, Andrew Bryden,	Dunmore,	3721 Spruce St.
Arey, Harold Carleton,	Camden, Me.,	3412 Sansom St.
A. B. (Colby),		
Arias, Joaquin Maria,	Panama,	249 S. 44th St.
*Bailey, William Richard,	Adelaide, Australia,	3708 Spruce St.
Barager, Christopher Fagan,	Hazleton,	3704 Locust St.
Barberena, Narciso, Jr.,	Granada, Nicaragua,	3927 Baltimore Ave.
Barker, Clinton Reed,	C. A.,	
Baskin, Leslie Dean,	Brooklyn, N. Y.,	Dorm. 25 Bodine.
Baumgardner, Paul Nelson,	Florence, S. C.,	3256 Walnut St.
Bell, William Forrest,	Wells Tannery,	3328 Woodland Ave.
Bittenbender, Frank Milnes,	Auckland, N. Z.,	3332 Lancaster Ave.
Blakeman, Ralph Sterling,	Bloomsburg,	2021 Arch St.
Blaschke, Hugo Johannes,	Mt. Vernon, N. Y.	3407 Walnut St.
Bleby, Charles Wendell,	Berlin, Germany,	Dorm. 250 Carruth.
Bookstein, Harry Leonel,	Nassau, New Providence, Bahamas,	101 S. 33d St.
Borden, Walter Augustus, Jr.,	Albany, N. Y.,	3704 Locust St.
Brake, Blonda Steele,	Philadelphia,	1122 Walnut St.
Campbell, Kenneth Graham,	Jane Lew, W. Va.,	3741 Spruce St.
Cannon, James Thomas,	Philadelphia,	209 S. 33d St.
Champagne, Emory Carl,	Oxford,	3265 Sansom St.
*Charsky, Harry Aaron,	New Haven, Conn.,	215 McAlpin St.
Dahl, Walter Herbert,	Philadelphia,	966 N. 5th St.
Darrone, Leon Oliver,	Fargo, N. D.,	3319 Walnut St.
Davis, John Leigh,	Syracuse, N. Y.,	126 S. 34th St.
Davis, Parke Meade,	Pulaski, N. Y.,	206 S. 37th St.
Day, John Crane,	Ebensburg,	3445 Walnut St.
Ph. B. (Wesleyan),	Morristown, N. J.,	3338 Walnut St.
De Camp, Ira Wilson,	Roseland, N. J.,	Dorm. 41 E. F. Smith.
Devine, Paul Farrell,	Newark, N. J.,	Dorm. 11 E. F. Smith.

\* Not in attendance.

Name.	Residence.	City Address.
De Witt, Herman Erastus,	Wolfville, N. S., Canada,	3256 Walnut St.
Durler, Victor Henry,	Schenectady, N. Y.,	3341 Woodland Ave.
Duxbury, Paul Coats,	Pine Plains, N. Y.,	3406 Sansom St.
Edwards, George Samuel,	Enid,	3256 Walnut St.
Ellis, Jason Stanley,	Elmira, N. Y.,	Dorm. 380 Lippincott.
Fancher, Walter Earle,	Montrose,	Dorm. 315 Leidy.
Fellows, Armin Thomas,	Philadelphia,	4006 Chestnut St.
Fox, W. Harold,	Cobleskill, N. Y.,	2220 Mt. Vernon St.
Friderich, Julius Max,	Wallingford, Conn.,	209 S. 33d St.
Garcia, Manuel Tomas,	Riobamba, Ecuador,	3350 Walnut St. S. A.
Gray, Walter Leon,	Bradley Beach, N. J.	3607 Locust St.
Gillespie, Edward Raymond,	Binghamton, N. Y.,	3339 Woodland Ave.
Goldschmidt, Lawrence	Philadelphia,	1414 N. 8th St.
Mathew,		
Green, Alexander Ralston,	Salem, N. J.,	124 S. 34th St.
Greenblatt, Robert Abraham,	New York, N. Y.,	South Broad, cor. Dey, Trenton, N. J.
Gregg, Harry Veeder,	Schenectady, N. Y.,	3341 Woodland Ave.
Hammond, Julian Theodore,	Philadelphia,	5005 Penn St., Fkd. 3d,
Harrington, James Boyle,	Ware, Mass.,	3745 Sansom St.
Hartley, Harry,	Philadelphia,	3607 Locust St.
Hausman, Emanuel,	Newark, N. J.,	125 S. 34th St.
Heefner, Mark Lester,	Waynesboro,	3216 Chestnut St.
Hill, William Zino,	Pittsburg,	225 S. 33d St.
Horrigan, William James,	Holyoke, Mass.,	3605 Locust St.
Hurley, Clarence Callan,	Wallingford, Conn.,	3607 Locust St.
Jones, Arthur George,	Wellington, N. Z.,	3406 Sansom St.
Kelley, John Otis,	Syracuse, N. Y.,	217 S. 33d St.
Kelly, Charles Francis,	Philadelphia,	1141 S. 18th St.
Kennedy, Walter Thomas,	Providence, R. I.,	3257 Chancellor St.
Kentgens, Johann Leonardo,	Hoengen, Germany,	3812 Locust St.
Kocher, Lawrence Edward,	West Orange, N. J.,	3816 Spruce St.
Koehler, Robert Henry,	Bridgeport, Conn.,	3407 Walnut St.
Krause, H. Ogle,	Philadelphia,	1704 Green St.
Kremer, Frederic Baney,	Lebanon,	3338 Lancaster Ave.
Lamb, Patrick Henry,	Paterson, N. J.,	3729 Spruce St.
Lane, Dennis Joseph,	Dushore,	3612 Locust St.
Latham, Ernest Richard,	Providence, R. I.,	109 S. 34th St.
Levan, Carl Emil,	Altoona,	3338 Walnut St.
Levy, Ellis,	Philadelphia,	1919 N. Marvine St.
Line, George William,	Carlisle,	1118 Girard St.
McCushing, George Joseph	Keene, N. H.,	3465 Sansom St.
Bernard,		
McGinnis, Charles Thomas,	Paterson, N. J.,	Dorm. 47 E. F. Smith.
Maby, Edward Raymond,	Cohoes, N. Y.,	3407 Walnut St.
MacGeorge, Hubert,	Camden, N. J.,	[521 Broadway.]
MacWilliams, Hugh,	Philadelphia,	2133 Bainbridge St.
Madden, John Joseph,	Danbury, Conn.,	216 S. 37th St.

Name.	Residence.	City Address.
Mahony, Daniel Joseph, A. B. (Bates),	Rochester, N. H.,	217 S. 33d St.
Master, Edward Andrews,	Flushing, N. Y.,	Dorm. 41 Coxe.
Mata, Jose Alejandro,	Quito, Ecuador, S.A.,	3346 Walnut St.
Mathers, Frank Earle,	Woodbury, N. J.	
Meierhoffer, Charles Joseph,	Orange, N. J.,	209 S. 33d St.
Michael, Reynard Conklin,	Mellenville, N. Y.,	4016 Locust St.
Molinar, Pedro Julian,	Chihuahua, Mexico,	3332 Walnut St.
Murphy, Royle Lawrence,	Ogdensburg, N. Y.,	3743 Locust St.
Murray, Jeremiah Louis,	St. John, N. B.,	109 S. 34th St. Canada,
Nash, Roscoe John,	Frenchtown, N. J.,	1918 N. 18th St.
Nesbit, Bruce Squires,	Lewisburg,	2741 N. 29th St.
Neukirch, Andre' John,	Mülhausen, Ger- many,	3340 Walnut St.
Ortiz, Ruben,	Vera Cruz, Mexico,	3735 Locust St.
Packard, William Thornton,	Clayton, N. Y.,	207 S. 33d St.
Park, Alexander Edgar,	Wayne,	
Pellerano, Manuel de Jesus,	Santo Domingo, W.I.,	3327 Walnut St.
Peters, Raymond Francis,	Egypt,	3244 Sansom St.
Petterson, Harry Eugene,	Worcester, Mass.,	Dorm. 347 McKean.
Pickard, George Clinton,	Victoria, B. C.,	5218 Reinhard St.
*Pierce, Emory Lowe,	Key West, Fla.,	3258 Chestnut St.
Pitt, Edward,	Bexhill, England,	217 S. 33d St.
Proctor, Gerald Fitzgerald,	Port of Spain, Trini- dad, B. W. I.,	217 S. 33d St.
Quinn, Joseph Alexander,	New Brunswick, N. J.,	3431 Walnut St.
Quinn, Joseph Frank,	New Haven, Conn.,	3431 Walnut St.
Raabe, Charles Samuel,	Leadville, Colo.,	3605 Locust St.
Radin, Louis Ralph,	Newark, N. J.,	125 S. 34th St.
Reilly, John Albert,	Hudson,	Dorm. 33 Morgan.
Riethmueller, Richard Henri,	Stuttgart, Germany,	210 S. 36th St.
Ph. D. (Pennsylvania),		
Rosenthal, Isidor,	Wilkesbarre,	3812 Locust St.
Rufe, Edgar Johnson,	Revere,	111 S. 34th St.
Russell, Daniel Stephen,	Philadelphia,	3404 Mantua Ave.
Scott, Robert Douglas,	Strathfield, Australia,	3600 Chestnut St.
Scully, Edward Paul,	Meriden, Conn.,	3314 Walnut St.
Shively, John Cornelius,	Caldwell, O.,	3706 Walnut St.
Smith, Miles Catlin,	Towanda,	3402 Sansom St.
Solomons, Joseph R., Jr.,	Brooklyn, N. Y.,	Dorm. 331 Franklin.
Stern, David Samuel,	Paterson, N. J.,	Dorm. 43 Coxe.
Stott, Harry Barton,	Rochester, N. Y.,	3244 Sansom St.
Sullivan, James Michael,	Fall River, Mass.,	3612 Locust St.
Sullivan, John Joseph,	Thompsonville, Conn.,	211 S. 33d St.
Swett, Fred Atwell,	Houlton, Me.,	3338 Lancaster Ave.
Vail, Clinton Theodore,	Middletown, N. Y.,	3422 Sansom St.
Vernon, George Herbert,	Florida, N. Y.,	212 S. 37th St.

\* Not in attendance.

## STUDENTS.

747

Name.	Residence.	City Address.
Walton, Charles Cleveland,	Thames, N. Z.,	3332 Lancaster Ave.
Weaver, Lee A.,	Blossburg,	20 N. 36th St.
Wharfield, Ernest Chester,	Springfield, Mass.,	Dorm. 305 Phillips Brooks.
Whitbeck, Clair Willis Van- Slyke,	Lamson, N. Y.,	3308 Walnut St.

## SPECIAL STUDENTS.

Collier, Frederic, D. D. S. (Pennsylvania),	Bordentown, N. J.,	3745 Spruce St.
Edwards, Howard Charles,	Napier, N. Z.,	17 N. 34th St.
Fiedler, Johannes Julius Walter Hermann, Zahnarzt (Germany),	Berlin, Germany,	Bellevue-Stratford Hotel.
Gormley, Thomas Augustus,	Providence, R. I.,	3727 Spruce St.
Gotuzzo, Caetano Netto, Cirurgiao Dentista (Brazil),	Pelotas, Brazil,	3733 Locust St.
Hales, Norman St. Clair, D. D. S. (Pennsylvania),	Wellington, N. Z.,	33 N. 34th St.
Hollenback, William Mar- sall, D. D. S. (Pennsylvania),	Philipsburg,	23 S. 34th St.
Labre, Bento José, Cirurgiao Dentista (Brazil),	Maranhao, Brazil,	3810 Powelton Ave.
Moraes, Guilherme de, Cirurgiao Dentista (Brazil),	Rio de Janeiro, Brazil, S. A.,	219 S. 33d St.
Peixoto, Mario, Cirurgiao Dentista (Brazil),	Bahia, Brazil, S. A.,	3215 Race St.
Twitmire, Wilbur Donahue, D. D. S. (Pennsylvania),	Bellefonte,	3338 Walnut St.

## SUMMARY.

Students of the Third-year Class.....	131
Students of the Second-year Class.....	123
Students of the First-year Class.....	120
Special Students .....	11
Total.....	385

## DEPARTMENT OF VETERINARY MEDICINE.

## POST-GRADUATE STUDENT.

Name.	Residence.	City Address.
Paulsen, Thomas Christian,	Baton Rouge, La.,	3438 Walnut St

## THIRD-YEAR CLASS.

Adams, Lionel Hugh,	West Bridgewater, Mass.,	3705 Woodland Ave.
Barnard, Harry Walter,	Philadelphia,	3605 Spring Garden St.
Blair, Bruce,	Worcester, Mass.,	3407 Walnut St.
Booth, Eli Thomas,	Hazleton,	3274 Chancellor St.
Cahill, Edward Aloysious,	Lowell, Mass.,	3703 Woodland Ave.
Campbell, Edward Coalson,	West Winfield, N. Y.	3271 Sansom St.
Coane, Samuel,	Philadelphia, do.	717 Dickinson St.
Cooke, Jr., William Alexander,	Manchester, N. H.,	1249 N. 28th St.
Crawford, Harry Calvin,	Philadelphia,	3705 Woodland Ave.
Devlin, Raymond Anthony,	Nanticoke, Mass.,	1615 N. 10th St.
Doyle, Thomas Augustus,	Milnesville,	3705 Woodland Ave.
Farley, Harry Michael,	Ononcock, Va.,	3911 Pine St.
Finney, Garland Edward,	Pine Grove Mills,	3935 Baltimore Ave.
Fry, Hugh Laurimore,	Hudson, Wis.,	39th and Woodland Av.
Fulton, Marcus Montgomery,	Philadelphia,	206 S. 36th St.
Graham, John Joseph,	Allentown,	3922 Pine St.
Griesemer, Samuel Franklin,	New Freedom,	3271 Sansom St.
Hartenstein, Frederick Helb,	Detroit, Mich.,	233 Apsley St.
Hoedt, Wilhelmus Herbert,	Marple,	117 Rochelle Ave., Wissahickon.
Horner, James Cover,	West Shokan, N. Y.	3647 Woodland Ave.
Houchin, Arthur Sydney,	Savannah, Ill.,	3276 Chancellor St.
Howe, Harry Hathaway,	Knoxville, Tenn.,	39th and Woodland Av.
Hughes, David William,	Lanesboro, Mass.	3705 Woodland Ave. 39th and Woodland Av.
Humphreyville, Jesse Free- man,	Halifax, N. S.,	39th and Woodland Av.
Jakeman, Harry Wesley,	Philadelphia,	3613 Haverford Ave.
Lee, William Joseph,	Walpole, Mass.,	221 S. 36th St.
Leighton, Harry Frederick,	Los Angeles, Cal.,	4047 Ludlow St.
Lowe, Cornelius Vanderbilt,	Scranton,	3909 Pine St.
Lynett, James Francis,	Fegmigalpa, Hondu- ras,	3441 Walnut St.
Moncada, Salvador,	Honeybrook,	3707 Woodland Ave.
Piersol, Warren Roy,	Broomall,	3647 Woodland Ave.
Powell, Isaac Briggs,	North Wales,	3743 Locust St.
Records, Jr., Edward,	Wilkesbarre,	3925 Baltimore Ave.
Roberts, Walter Ellis,	Hellertown,	718 N. 42d St.
Ruch, Herbert Edgar,	Eldred,	Dorm. 356 Class of '87.
Sartwell, Roswell Corbett,	Somerset,	3920 Pine St.
Schrock, Edwin Dorner,		

Name.	Residence.	City Address.
Schultz, Chas. H.,	Tacoma, Washington,	258 S. 38th St.
Sommer, Henry Lazar,	Braila, Roumania,	3253 Sansom St.
Spang, Rudolf,	Philadelphia,	2637 N. Marshall St.
Van Buskirk, George Trinkle,	Willow Grove.	
White, Walter Glenn,	Philadelphia,	4210 Ogden St.

## SECOND-YEAR CLASS.

Arias, Clodoaldo Antonio.	Pinar del Rio, Cuba,	3933 Baltimore Ave.
Barnes, Hugh Wrighter	Thompson,	3619 Sansom St.
Baxter, Louis Esere,	Newark, N. J.,	26 N. 38th St.
Brown, William Karl,	Wissinoming,	Erdrick St.
Burke, Herbert Irving.	Philadelphia,	3909 Pine St.
Cecil, Joseph Daggett,	do.	4126 Chester Ave.
Chandler, Fred.,	Miners Mills,	Dorm. 48 Morgan.
Connelly, Matt Joseph.	Salt Lake City, Utah,	3932 Pine St.
Cuervo, Francisco Guillermo,	Pinar del Rio, Cuba,	3933 Baltimore Ave
Cueto, Julian Franciso del,	Havana, Cuba,	3331 Walnut St.
Davis, Frederick Edward.	Nanticoke,	3704 Spruce St.
Gendrique, Juan Bautista,	San Juan, P. R.,	3628 Sansom St.
Gerety, Joseph Patrick,	Philadelphia.	3245 Locust St.
Gibbs, Ernest Emery,	Brooks, Me.,	3619 Sansom St.
Gimper, William Stokley	Baltimore, Md.,	5333 Reinhard St.
Goldhaft, Arthur Davenport,	Philadelphia,	1032 S. 5th St.
Griffith, John James,	Tyler Hill,	3931 Baltimore Ave.
Gunner, Benjamin,	Philadelphia,	1809 S. 4th St.
Hoskins, Horace Preston,	do.	3314 Powelton Ave.
Ivens, William Henry,	Chestertown, Md.,	25 N. 50th St.
Jackley, John Grover,	Coon Rapids, Iowa,	3608 Locust St.
Loblein, Jr., Eldon Leon,	New Brunswick, N. J.,	3717 Spruce St.
Maddox, Myron Edwin,	Augusta, Me.,	3619 Baltimore Ave.
Mancill, David Duer,	Kennett Square,	217 De Kalb Sq.
Maurer, Franklin Jacob,	Lansford,	3424 Sansom St.
McDonough, John Francis,	Worcester, Mass.,	3919 Baltimore Ave.
Moyer, Vincent Cassel,	Philadelphia,	126 S. 34th St.
Murphrey, Herbert Merrill,	Claymont, Del.	3524 Sansom St.
Newton, Charles,	Sharptown, N. J.,	3932 Pine St.
O'Dea, Timothy Francis,	Jersey City, N. J.,	Dorm. 52 Morris.
Parker, Walter Giddings,	Clarks Green,	4511 Chester Ave.
Pope, Ira Stanley,	Chevey Chase, Md.,	3424 Sansom St.
Quinn, Thomas John,	Doarby.	
Kenninger, Paul Haas,	Manatawny,	217 S. De Kalb Sq.
Rosenberger, John Newton,	Devon.	
Sanchez, Carlos,	Buenos Aires, S. A.,	3331 Walnut St
Smith, George Timothy,	Lairdsville,	3704 Spruce St.
Tegtmeyer, August,	Philadelphia,	644 S. 56th St.
Thomas, John Ehalt,	Greensburg,	3925 Pine St.
Winstanley, John Hampton,	Philadelphia,	3400 Spruce St.
Zurkow, Maurice,	do.	3253 Sansom St.

## FIRST-YEAR CLASS.

Name.	Residence.	City Address.
Archibald, Robert Wilson,	Clairemont, N. H.,	3723 Locust St.
Bagenstose, Harry William,	West Leesport,	3723 Locust St.
Barnes, Miller Freeman,	Polk,	3935 Baltimore Ave.
Bolich, Joseph Louis,	Ashland,	3715 Woodland Ave
Boylan, John Lawrence,	Philadelphia,	763 N. 43d St.
Bredt, Martin,	do.	1626 S. 4th St.
Carter, Barclay Fred	Norristown,	3440 Walnut St.
Christensen, Louie,	Northwood, Iowa,	3706 Spruce St.
Collins, Bernard Michael,	Pittsfield, Mass.,	3704 Spruce St.
Commaker, Albert,	Philadelphia,	2628 Oxford St.
Cooke, Herbert Thomas Barr,	do.	1249 N. 28th St.
Curley, Edward Michael,	St. Clair,	258 S. 38th St.
Deegan, William James,	Burlington, N. J.,	3801 Spruce St.
Dennis, Guy Hewitt,	Perryville, Md.,	3440 Walnut St.
Deubler, Ernest Christian,	Springville,	rfd 3 Media, Pa.
Dewey, Michael George,	Ashland,	138 N. 21st St.
Dihlmann, Charles John,	Egg Harbor, N. J.	3911 Pine St.
Fessler, Ralph Henry,	Philadelphia,	4008 Ludlow St.
Fisher, Augustus Milford,	do.	3814 Spruce St.
Fulstow, Phil H.,	Norwalk, Ohio,	Norwood.
Guilfoyle, Calvert Thomas,	Northwood,	3520 N. Broad St.
Haigh, Henry Harrison,	North Wales,	3717 Spruce St.
Hardenbergh, James Ball,	Berkshire, N. Y.,	3723 Locust St.
Haubrich, Leonard Roberts,	Clairemont, N. H.,	1217 N. 8th St.
Herbott, Julius William,	Philadelphia,	107 W. Wyoming Ave.
Hess, Henry Emil,	do.	S. E. cor. 35th and
Hileman, Walter Scott,	Williamsburg,	Spring Garden Sts.
Hopper, John Griffith,	Chesapeake City, Md.,	907 S. 49th St.
Hoskins, Cheston Morris,	Philadelphia,	3314 Powellton Ave.
Jackson, George Ward,	Glen Osbourne,	Dorm. 31 E. F. Smith.
Kane, John Francis,	New Milford, Conn.,	3706 Spruce St.
Kaufman, Isaac Harold,	Athens,	3713 Woodland Ave.
Kichline, Howard Franklin,	Allentown,	3611 Locust St.
Kingston, James Matthew,	Allston, Mass.,	3707 Locust St.
Klein, Fred Seymor,	Shenandoah,	Strafford.
Koontz, Royal Bertram,	Stoyestown,	3935 Baltimore Ave.
Kuhn, Gustave,	Brooklyn, N. Y.,	3713 Woodland Ave.
Leinbach, Harry R.,	Boyertown,	3609 Sansom St.
Lothe, Herbert,	McFarland, Wis.,	3612 Locust St.
Mirick, Chas. Evans,	Philadelphia,	4018 Green St.
Molinary, Leo Baiz,	San Juan, Porto Rico,	3258 Chestnut St.
Moyer, Calvin W.,	Richland Center,	3919 Baltimore Ave
Neiworth, Harry Samuel,	Newark, N. J.,	
Norton, Elwin Sheldon,	Waymart,	3743 Spruce St.
Reifsnyder, Irvin Spatz,	Pottstown,	3609 Sansom St.
Ring, William Charles,	Auckland, New Zea- land,	3743 Locust St.
Rogers, Lambert Tyrell,	Warrington,	3802 Spruce St.

## STUDENTS.

751

Name.	Residence.	City Address.
Royer, Martin Buch,	Brownstown,	3449 Walnut St.
Sainz, Antonio,	Marianao, Cuba,	3933 Baltimore Ave.
Salcedo, Julio Antonio,	Ascencion, Paraguay, S. A.,	4606 Baltimore Ave.
Sax, David Max,	Philadelphia,	306 Christian St.
Schwartz, Meyer Simon,	do.	1715 N. 7th St.
Shannon, William Herbert,	Boston, Mass.,	3720 Locust St.
Shook, Warren Burdette,	Greencastle,	3919 Baltimore Ave.
Stein, Clarence Dinsmore,	Sharpsburg,	3814 Spruce St.
Stevens, Cecil Hiram,	Kingston,	3801 Spruce St.
Stewart, Jr., Samuel Bel'	Philadelphia,	1214 S. 18th St.
Stubbs, Evan Lee,	Oxford,	5137 Webster St.
Sullivan, John Lawrence,	Glace Bay, N. S.,	4020 Girard Ave.
Tremper, William Leonard,	Fullerton, Md.,	3704 Spruce St.
Waterman, Clarence Mason,	Lebanon, Conn.,	3611 Locust St.
Wieand, Harry John,	Allentown,	

## SPECIAL STUDENTS.

Abbott, Lunsford,	Kinston, N. C.,	3741 Spruce St.
Cyphers, James Marshall,	Chester, N. J.,	3407 Walnut St.
Marcy, Jr., Samuel Sumner,	Cape May, N. J.,	203 De Kalb Sq.
Suplee, Raymond Crawford,	Philadelphia,	1945 S. 16th St.

## SUMMARY.

Students of the Third-year Class.....	42
Students of the Second-year Class.....	41
Students of the First-year Class.....	62
Students of the Special Class.....	4
Post-Graduate Student .....	1
 Total.....	 150



## **PART IX**

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### **DIRECTORY OF OFFICERS**



## DIRECTORY OF OFFICERS.

The following is a directory of all University officers, both of administration and instruction. The first address given in each case is the residence; the second, the address to which mail-matter should be directed. Where one address only is given, mail should be directed accordingly. Unless otherwise specified, all street addresses given are in the city of Philadelphia.

The figures bracketed after each name indicate the page on which the name may be found at the beginning of the Catalogue. When these figures are lacking, it is understood that the appointment or election occurred too late for record in the earlier pages.

ABBOTT, A. C., (Dr.), Professor. [32]  
4229 Baltimore Ave.

ADAMS, J. S., Lecturer. [56]  
4226 Pine St.

ADAMS, J. W., (Dr.), Professor. [31]  
1102 S. 46th St.

ADAMSON, K. F., Instructor. [52]  
3816 Spruce St.  
Department of Mechanical Engineering.

ADDISON, W. H. F., (Dr.), Dem. [44]  
4518 Kingsessing Ave.  
Logan Hall.

ADLER, J., Instructor. [52]  
14 W. Mount Airy Ave.

ALLEN, A. R., (Dr.), Instructor. [44]  
111 S. 21st St.

ALLEN, F. W., (Dr.), Demonstrator. [41]  
1922 Spring Garden St.  
1624 Wallace St.

ALLEN, J. H., (Dr.), Asst. Instructor. [46]  
1435 Poplar St.

ALLYN, H. B., (Dr.), Associate. [39]  
501 S. 42d St.

AMEND, F. W., Jr., (Dr.), Dem. [38]  
920 S. 49th St.

AMES, H. V., Professor and Dean. [34]  
210 S. 37th St.  
College Hall.

AMRAM, D. W., Lecturer. [56]  
5353 Magnolia Ave., Germantown.  
1416 S. Pean Sq.

ANSPACH, B. M., (Dr.), Associate. [41]  
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3340 Walnut St.

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## **PART X**

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### **GENERAL SUMMARIES AND INDEX.**



## GENERAL SUMMARIES.

## OFFICERS OF INSTRUCTION.

The College .....	220
Graduate School.....	80
Department of Law.....	26
"    " Medicine.....	157
"    " Dentistry .....	52
"    " Veterinary Medicine.....	25
Emeritus Professors.....	3
	— 563
Duplications .....	109
	—
Total .....	454

## STUDENTS.

The College	School of Arts.....	412	2989
	Towne Scientific School .....	987	
	Wharton School.....	472	
	Courses for Teachers.....	384	
	Evening School of Accounts and Finance .....	253	
	Summer School (1908) .....	481	
Graduate School .....	353		
Department of Law.....	327		
"    " Medicine.....	559		
"    " Dentistry .....	385		
"    " Veterinary Medicine.....	150		
	— 4763		
Duplications .....	193		
	—		
Total .....	4570		

## GEOGRAPHICAL SUMMARY OF STUDENTS.

Alabama .....	15	Bermuda .....	1	Canada.....	9
Argentine Republic	7	Bolivia .....	1	Central America..	10
Arkansas .....	5	Brazil .....	16	Chile .....	1
Asia Minor.....	1	British Columbia..	2	China .....	31
Australia .....	21	Brit. West Indies	5	Colombia .....	5
Austria .....	2	California.....	12	Colorado .....	8

## SUMMARIES.

Connecticut.....	45	Louisiana.....	4	Peru .....	2
Costa Rica.....	5	Maine .....	20	Philippine Islands.	1
Cuba.....	15	Maryland .....	68	Poland .....	3
Delaware .....	67	Massachusetts .....	67	Porto Rico .....	12
Denmark .....	1	Mexico .....	9	Rhode Island .....	9
Dist. of Columbia.	25	Michigan .....	11	Roumania .....	2
Egypt.....	2	Minnesota .....	14	Russia .....	6
Ecuador.....	5	Mississippi .....	3	South Carolina ...	7
England .....	7	Missouri .....	15	Sweden.....	1
Florida .....	9	Nebraska .....	2	Switzerland .....	1
France .....	6	New Hampshire .....	10	Tennessee .....	13
Georgia .....	15	New Jersey .....	333	Texas .....	12
Germany .....	16	New York .....	213	Turkey.....	1
Holland .....	7	New Zealand .....	15	Utah.....	13
Honduras.....	1	Nevada .....	2	Vermont .....	5
Idaho .....	4	Newfoundland .....	2	Virginia .....	21
Illinois .....	20	North Carolina .....	16	Washington.....	12
Indiana .....	30	North Dakota .....	2	West Virginia .....	8
Iowa .....	21	Nova Scotia.....	7	Wisconsin .....	14
Ireland.....	1	Ohio .....	60	Total .....	4763
Italy.....	3	Oregon .....	2	Duplications .....	193
Japan .....	9	Panama .....	2	Total .....	4570
Kansas .....	6	Paraguay .....	3		
Kentucky .....	8	Pennsylvania .....	3260		

## INDEX.

**NOTE.**—A subject-title followed by the word "course" here signifies a series of subjects of instruction so arranged as to lead to a degree or certificate. The subject-title alone, as "Anatomy," refers to instruction offered in that subject. When instruction is offered in one subject by several Departments, the page numbers are followed by the initial letter of the corresponding Department: (C) = College, (G) = Graduate School, (L) = Law, (M) = Medicine, (D) = Dentistry, (V) = Veterinary Medicine.

Academic Council.  
    Members, 69.  
    Committees, 69.  
Administrative Offices, 25-28.  
Admission.  
    See under the several Departments.  
Advanced Standing.  
    See under the several Departments.  
Alumni Societies, 603-14.  
Anatomy, 402, (M); 499, (D); 519, (V).  
Animal Industry, 518.  
Anthropology, 173.  
Appointment Committee.  
    Graduates, 559.  
Arabic, 359.  
Aramaic, 359.  
**Archaeology, Department of**  
    Officers, 552.  
    Museum, 553.  
Archaeology, 322.  
Architecture.  
    Course in, 127-41.  
    Admission to, 82.  
    General Information, 127.  
    The Full Course, 128.  
    The Graduate Year, 129.  
    The Special Course, 129.  
    Arts and Architecture, 120, 127.  
    Instruction, 175-82.  
    Tuition, 103-4.  
Arts and Architecture.  
    See Architecture.  
Arts and Science.  
    See College.  
Assyrian, 357.  
Astronomical Observatory, 547.  
Astronomy, 183, 283, (C); 324, (G).  
Athletics. University Committee on, 564.  
Bacteriology, 407, (M); 500, (D); 527.  
    (V).  
Banking.  
    See Finance.  
Bible Classes, 602.  
Biology.  
    Course in, 121-24.  
    Admission, 82.  
    Tuition, 103-4.  
    Biology, 517, (V).  
Blanchard Professorship, 30.  
Board and Lodging, 106.  
    See also Dormitories.  
Botany, 183, 284, 290, 295, (C); 325, (G); 517, (V).  
Buildings.  
    See Location; see also Map.  
Bursar of the University, 25.

Business Practice.  
    See Finance.  
Calendar, University, 9-11.  
Catalogues, Applications for, 7.  
Cercle Français, 600.  
Certificates, Admission by.  
    See under the several Departments.  
Certificate of Proficiency, 108;  
    in Architecture, 127, 134;  
    in Biology, 122;  
    in Business Practice and Banking,  
        167.  
Certificates of Proficiency awarded 1908,  
    587.  
**Chemical Engineering.**  
    Course, 163.  
    Admission, 82.  
    Tuition, 103-4.  
**Chemistry.**  
    Course, 160.  
    Admission, 82.  
    Instruction, 186, 283, 295, (C); 328,  
        (G); 411, (M); 498, (D); 516, (V).  
    Tuition, 103-4.  
**Christian Association, 601.**  
**Christian Settlement, 601.**  
**Civil Engineering.**  
    Course in, 154.  
    Admission, 82.  
    Instruction, 189.  
    Tuition, 103-4.  
**COLLEGE, THE**  
    Faculty, 59-68  
    Divisions, 71.  
    Admission, 75-80.  
    Advanced Standing, 100.  
    Special and Partial Courses, 101.  
    Classification of Students, 102.  
    Fees and Deposits, 103-4.  
    Examinations and Grades, 107.  
    Sessions, 106.  
    Degrees, 107.  
    Scholarships and Prizes, 108-17.  
    Courses:  
        School of Arts, 118-25.  
            Arts and Science, 118-20.  
            Biology, 121-24.  
        Music, 124-25.  
    Towne Scientific School, 126-66.  
        Architecture, 127.  
        Mechanical and Electrical Engineering, 142.  
        Civil Engineering, 154.  
        Chemistry, 160.  
        Chemical Engineering, 163.

*College, The*  
 Wharton School of Finance and Commerce, 167.  
 Subjects of Instruction, 172.  
 Evening School of Accounts and Finance, 271.  
 College Courses for Teachers, 280.  
 Saturday Courses for Teachers, 295.  
 Summer School, 299.  
 List of Students.  
   See Students.

Commerce, see Economics.  
 Committees, Standing, 24.  
   Trustees, 23.  
   Academic Council, 690, (C).  
   Executive, 310, (G).  
   Athletics, 564.  
   Non-Athletic Organizations, 566.  
   Graduates' Appointment, 559.  
   Publication, 561.  
 Contests, Table of, 3.

Degrees:  
   Bachelor of Arts, 71, 107, 120, 140, 280;  
     Laws, 360;  
     Music, 72, 108, 125;  
     Science, 71, 107, 120, 140,  
       281;  
     Science in Architecture, 73,  
       127, 140;  
       in Biology, 71, 122;  
       in Chemistry, 73,  
       107, 160;  
       in Chemical Engineering, 73, 107,  
       164;  
       in Civil Engineering, 73, 107, 154;  
       in Economics, 73,  
       107;  
       in Electrical Engineering, 73, 107,  
       143;  
       in Mechanical Engineering, 73, 107,  
       143;  
   Civil Engineer, 108, 154;  
   Doctor of Dental Surgery, 492;  
     Medicine, 459;  
     Music, 122 note;  
     Philosophy, 313;  
     Veterinary Medicine, 524;  
   Electrical Engineer, 108, 143;  
   Master of Arts, 313;  
     Science, 313;  
     Science in Architecture,  
       107, 127;  
   Mechanical Engineer, 108, 143.  
 Degrees conferred 1908, 570.

**DENTISTRY, THE DEPARTMENT OF,**  
 477-506  
 Faculty, 477-79.  
 History and Organization, 480.  
 Equipment, 481.  
 Admission, 482.  
 Advanced Standing, 488.  
 Scholarships, 488.  
 Status of Students, 489.  
 Special Courses, 489.

*Dentistry, The Department of*  
 Arrangement of Session, 490.  
 Examinations, 490.  
 Graduation, 492.  
 Text-books, 492.  
 Roster, 494.  
 Course, 496.  
 Instruction, 497.  
 Fees and Expenses, 503.  
 Clinical Practice, 502.  
 List of Students.  
   See Students.

Dentistry;  
   Clinical, 501.  
   Operative, 497.  
   Prosthetic, 498.

**Departments of the University, 22.**

Deposits, see Financial Obligations; see also under the several Departments.

Dermatology, 431.

Deutscher Verrin, 600.

Directory of Officers, 755.

Dispensary Service Hospital, 474.

Dormitories, 573.

Economics, 196, 252, 283, 291, 295, (C);  
 333, (G).

Electrical Engineering.  
   Course in, 142, 152.  
   Admission, 82.  
   Instruction, 230.  
   Tuition, 103-4.

Employment, 560.

Endowment of Professorships, etc.  
 Sums requisite, 21.

**ENDOWMENTS, GIFTS AND MEMORIALS.\***

D. Hayes Agnew Memorial Pavilion, 475.

Allen Library, 531.

George Allen Memorial Prizes, 115.

Alliance Francaise Prize, 115.

Alliance Francaise Scholarships, 111.

Alumni Medal, 461.

Architectural Alumni Scholarship, 110.

Architecture, Prize in, 115.

Society of the Alumni Prize, 114.

Assayers and Miners Gangue Prize, 114.

Baird Scholarship, 110.

George Barnett Scholarship, 111.

John Rhea Barton Professorship, 30.

Bechstein Library, 531.

Joseph M. Bennett Fellowships, 320.

Philo S. Bennett Prize, 117.

Bartram Memorial Library, 533.

Biddle Memorial Law Library, 364, 530.

Algernon Sydney Biddle Professorship, 31.

Thomas A. Biddle Library, 535.

Brinton Library, 532.

Arthur Spayd Brooke Memorial Prize, 116.

Cadwalader Scholarship, 110.

William Camac Collection, 534.

Carey Library, 531.

Clark Research Professorship, 30.

Class of 1878 Scholarship, 110.

Class of 1880 Prize, 112.

Class of 1889 Fund, 530.

Colwell Library, 530.

\* Only those mentioned in the Catalogue are found in this list; for a complete list see the Provost's Reports.

*Endowments, Gifts and Memorials.*

- Benjamin Bartis Comegys, Jr., Library, 530.
- John H. Converse Scholarship, 111.
- Cope Library, 532.
- Brinton Coxe Library, 530.
- Chas. Brinton Coxe Scholarship, 110.
- Eckley B. Coxe Scholarship, 111.
- Crawford Library, 535.
- Dante Society Prize, 115.
- Deference of Payment Scholarships, 112.
- Eugene Delano Prize, 112.
- Faculty Prizes, 112, 113.
- Lavinia Barnett Fairchild Scholarship, 111.
- Flower Astronomical Observatory, 547.
- Flower Professorship, 32.
- Benjamin Franklin Scholarships, 109.
- Frazer Library, 532.
- John Fries Frazer Fellowship, 319.
- George H. Frazier Prizes, 110.
- William West Frazier Prizes, 115.
- Gibson Wing for Chronic Diseases, 474.
- Stephen Greene Scholarship, 110.
- J. S. H. Prizes, 116.
- George Leib Harrison Foundation, 317.
- John Harrison Laboratory of Chemistry, 161.
- Louise Harrison Scholarship, 110.
- Hassler Prize, 117.
- Hayden Library, 532.
- William P. Henszey Scholarship, 111.
- Hough Collection, 534.
- Houston Hall, 590.
- Rush S. Huidekoper Library, 533.
- Institution for Blind Scholarships, 111.
- Marcus Jastrow Memorial Library, 532.
- Henry La Barre Jayne Prize, 115.
- George deB. Keim Library, 535.
- Kendall Library, 533.
- E. Otis Kendall Scholarship, 110.
- Krauth Library, 530.
- Hartman Kuhn Scholarship, 110.
- Lamborn Library, 534.
- James Latta Scholarship, 110.
- Leidy Library, 532.
- Leutsch Library, 531.
- J. B. Lippincott Library, 531.
- J. B. Lippincott Prize, 524.
- John Logan Scholarship, 110.
- Henry Morton Lovering Memorial Collection, 533.
- McCartee Library, 532.
- Francis C. Macaulay Library, 531.
- Martha Austin McDowell Scholarship, 111.
- Meredith Prize, 371.
- Randal Morgan Laboratory of Physics, 27.
- Samuel V. Merrick Scholarship, 109.
- S. Weir Mitchell Prizes, 117.
- Mrs. Bloomfield Moore Fellowships, 320.
- P. Pemberton Morris Prize, 371.
- Dr. Spencer Morris Prize, 461.
- Robert Morris Scholarship, 110.
- Muir Scholarships, 110.
- Mulford Prize, 117.
- Isaac Norris Library, 534.
- Frederick A. Packard Prize, 461.
- Penn Scholarships, 109.

*Endowments, Gifts and Memorials.*

- Pennsylvania State Scholarships, 109.
- Pepper Professorship, 32.
- Frances Sergeant Pepper Foundation, 320.
- William Pepper Library, 533.
- William Pepper Clinical Laboratory, 454.
- Phi Kappa Sigma Prize, 114.
- Philadelphia City Scholarships, 109.
- Philadelphia Society for Promoting Agriculture Library, 533.
- Pott Library, 531.
- Thomas Potter Library, 533.
- Thomas H. Powers Scholarship, 110.
- Priestley Club Prize, 114.
- Henry Reed Prize, 113.
- Evans Rogers Library, 533.
- Fairman Rogers Library, 533.
- Ryder Library, 532.
- George Schleicher Scholarship, 111.
- George Schleicher Prize, 117.
- Anna Duke Scott Amphitheatre 455.
- Thomas A. Scott Fellowship, 545.
- Thomas A. Scott Professorship, 30.
- Adam Seybert Professorship, 32.
- Henry Seybert Library, 530.
- Sharwood Prize, 371.
- S. K. Shipley Scholarship, 111.
- John Stewardson Memorial Scholarship, 117.
- Thomas S. Stewart Scholarship, 110.
- Stille Library, 531.
- Charles J. Stille Library, 534.
- T-Square Club Prize, 114.
- Adam Clarke Thompson Scholarship, 111.
- Tower Library, 532.
- Towne Foundation, 126.
- Hector Tyndale Fellowship, 319.
- D. Van Nostrand Prize, 115.
- Tobias Wagner Library Fund, 534.
- John Welsh Centennial Professorship, 30.
- West Philadelphia Medical Library Club Library, 533.
- Wetherill Library, 532.
- Wharton Foundation, 167.
- Whitney Professorship, 30.
- Albert Monroe Wilson Scholarship, 111.
- Wistar Institute of Anatomy and Biology, 537-40.
- Wistar and Horner Museum, 453, 539.
- Wood Home for Nurses, 476.
- Wylie Library, 531.
- Joseph Warner Yardley Prize, 114.
- Zelosophic Society Library, 535.
- Engineering, see College.
- Engineering, Instruction in.
- See Mechanical, Electrical, Civil, Chemical.
- English, 197, 284, 296, (C); 336 (G).
- Ethics.
- See Philosophy.
- Evening School of Accounts and Finance, 271-70.
- Examinations.
- See the several Departments.
- Exchange Bureau, 563.

## Expenses.

See under the several Departments;  
see also Financial Obligations.  
Faculty, 29-50; see also under the several  
Departments.

## Fees.

See Financial Obligations; see also  
under the several Departments.

## Fellowships.

See under the several Departments.  
Fellowship Funds, see George Leib Har-  
rison Foundation.

Finance and Commerce, 252, 271, (C);  
335, (G).

## Financial Obligations, etc., 560-76.

Rules governing payments, 569. Dor-  
mitories, 573.

Fine Arts, 202, 284.

French, 204, 284, 296, (C); 356, (G).

Genito-Urinary Diseases, 438.

## Geography.

See Economics.

German, 210, 285, 296, (C); 342, (G).

Geology, Mineralogy, Metallurgy, 207, (C);  
340, (G).

## GRADUATE SCHOOL, THE, 307-361.

Faculty, 307-10.

Executive Committee, 310.

General Information, 311-21.

Fees and Deposits, 306.

Fellowships and Scholarships, 317-21.

Instruction, 322-60.

Graduate Department for Women, 361.

List of Students, see Students.

Graduates' Appointment Committee, 559.

## Graduation.

See under the several Departments.

Greek, 213, 285, (C); 330, (G).

Gymnasium, 549.

Gynecology, 430.

The George Leib Harrison Foundation, 318.

Fellowships and Scholarships, 318-21.

Fellowship Funds, 519, 529.

Hebrew, 215, (C); 358, (G).

Histology, 403, (M); 497, (D); 519, (V).

History, 215, 286, 291, 297, (C); 315, (G).

History of the University, 14-21.

Home for Nurses, 476.

Honorary Degrees Conferred, 1908, 570.

Honors Awarded, 1908, 588.

Horseshoeing, 519.

## Hospital.

See University Hospital; see also Veter-  
inary Hospital.

Houston Club, 599.

Houston Hall, 599.

Hygiene, 221, (C); 407, (M).

## HYGIENE, THE LABORATORY OF,

541-46.

Staff, 541.

Instruction, 541-43.

Fees, 544.

General Regulations, 544.

Fellowships, 545.

Instruction, see under subject titles; see  
also under the several Departments.

Instruction, Officers of, 29-56.

Italian, 222, (C); 348, (G).

Laryngology, 437.

Latin 222, 286, 303, (C); 331, (G).

## LAW, THE DEPARTMENT OF, 362-73.

Faculty, 362-63.

Registrar, 362.

General Information, 363-66.

Instruction, 366-70.

Scholarships, 371.

Prizes, 371.

Fees and Deposits, 371.

Expenses, 372.

List of Students, see Students.

## LIBRARY, THE UNIVERSITY, 529-36.

Biddle Memorial Law, 364, 530.

Medical, 456.

Linguistics, 226.

Lists of Students.

See Students.

Location of University Buildings, 7.

Lodging, see Board; see also Dormitories.

Map of University Grounds.

Before title page.

Mask and Wig Club, 600.

Materia Medica.

See Pharmacy.

Mathematics, 226, 287, 291, 303, (C); 348,  
(G).

## Mechanical Engineering.

Course, 142-53.

Admission, 82.

Instruction, 230-38.

Tuition, 104.

MEDICINE, THE DEPARTMENT OF  
374-466.

Faculty, 374-80.

History, 381.

Admission, 382-400.

Advanced Standing, 399.

Course of Study, 401.

Instruction Offered, 402-39.

Electives, 438.

Roster, 440-47.

Text-books, 448.

Equipment, 451.

Arrangement of Session, 457.

Fees and Expenses, 457.

Examinations, 458.

Graduation, 459.

Scholarships, 460.

Prizes, 461.

Hospital Appointments, 462.

List of Students.

See Students.

Medicine, 420, (M).

Medicine, year in Arts and, 120.

## Metallurgy.

See Geology.

## Mineralogy.

See Geology.

## Museum.

Archaeology, 553.

Anatomy and Biology, (Wistar Insti-  
tute), 453, 502, 537.

## Music.

Courses, 124, 125.

Admission, 82.

Degrees, 125.

Instruction, 238.

Tuition, 104.

Musical Clubs, 600.

Neurology, 434.

Non-Athletic Organizations.  
Committee on, 566.

Nurses.  
Training School and Home, 476.

Observatory, Astronomical, 547.

Obstetrics, 433, (M); 522, (V).

Officers.  
of Administration, 25-28.  
Directory of, 755-66.  
of Instruction, 29-36.

Ophthalmologist, Students', 26.

Ophthalmology, 432.

Oral Surgery, 501.

Orthodontia, 407.

Orthopedic Surgery, 129.

Otology, 437.

Partial Courses, 101, 108, (C).  
Tuition, 105.

Pathology, 414, (M); 497, (D); 520, (V).

Payments, Rules governing, 569.

Pedagogy, 241, 287, 292, 297, 304, (C); 350, (G).

Pediatrics, 436.

Pharmacy and Therapeutics, 417, (M); 520, (V).

Philomathean Society, 599.

Philosophy, 240, 288, 305, (C); 350, (G).

**PHYSICAL EDUCATION, THE DEPARTMENT OF**, 548-51.  
Staff, 548.  
General Information, 548-50.  
Gymnasium, 549.  
Instruction, 550.

Physician, Students', 26.

Physics, 242, 288, 297, (C); 354, (G).

Physiology, 412, (M); 517, (V).

Political Science, 244, 255, 292, (C); 333, (G).

Prizes Offered, 1908-9.  
See under the several Departments.

Prizes Awarded, 1908, 590.

Provost of the University, 25.

Psychology, 245, 288, 293, 297, (C); 352, (G).

Publications, University, 561.

Public Health, 410.

Requirements for Admission and Graduation.  
See under the several Departments; see also under Degrees.

Rhinology, 437.  
Roster.  
See under the several Departments.

Sanskrit, 247, (C); 348, (G).

Scholarships.  
See under the several Departments.

Secretary (Aast.), of the University, 25.

Semitic Languages, 357.

Sessions.  
See Calendar; see also under the several Departments.

Societies.  
Alumni, 603.  
Undergraduate, 500.

Sociology, 247, 257, (C); 335, (G).

Spanish, 248, (C); 356, (G).

Special Courses.  
College, 101-02.  
Tuition, 103, (C).  
Law, 366.

Students, Lists of College.  
Post Seniors, 617.  
Seniors, 617.  
Juniors, 623.  
Sophomores, 629  
Freshmen, 638.  
Special Students, 651.  
Partial Students, 654.  
Courses for Teachers, 657.  
Summer School, 665.  
Evening School, 675.  
Summary, 681.

Graduate School.  
Fellows and Scholars, 682.  
Regular Students, 690.  
Auditors, 708.  
Summary, 710.

Department of Law.  
Graduate Students, 711.  
Third-year Class, 711.  
Second-year Class, 713.  
First-year Class, 716.  
Special Students, 720.  
Summary, 721.

Department of Medicine.  
Post-graduate Students, 722.  
Fourth-year Class, 722.  
Third-year Class, 725.  
Second-year Class, 729.  
First-year Class, 733.  
Special Students, 737.  
Summary, 737.

Department of Dentistry.  
Third-year Class, 738.  
Second-year Class, 741.  
First-year Class, 744.  
Special Students, 747.  
Summary, 747.

Department of Veterinary Medicine.  
Third-year Class, 748.  
Second-year Class, 749.  
First-year Class, 750.  
Special Students, 751.  
Summary, 751.

Students' Physician, 26.

Sumerian, 358.

Summaries, General, of Officers and Students, 769.

Summer School, 299-306.

Surgery, 425, (M); 501, (D); 521, (V).

Syriac, 359.

Teachers.  
College Courses for, 280-94.  
Saturday Courses for, 295-98.

Therapeutics.  
See Pharmacy.

Title, Legal, of University, 21.

Towne Scientific School, 126.  
Courses in, 72.

Toxicology, 411.

Training School  
See Nurses.

Transportation.  
See Economics.

Treasurer of the University, 25.

**TRUSTEES OF THE UNIVERSITY**, 23.  
Chairmen of Standing Committees of, 24.

Tyndale Foundation, 319.

Tuition.  
See Fees; see also under the several  
Departments and Courses of Study.

**UNIVERSITY, THE**  
General Information, 7.  
Calendar, 9-11.  
History, 13-21.  
Corporate Title, 21.  
Departments, 22.  
Trustees of, 23.  
Officers of Administration, 25-28.  
Officers of Instruction, 29-56.

**UNIVERSITY HOSPITAL, THE**, 455, 467-76.  
Board of Managers, 467.  
General Information, 474.  
Medical Staff of, 468.  
University House, 601.  
University Service, 601.

**VETERINARY MEDICINE, THE DEPARTMENT OF**, 507-526.  
Faculty, 507.  
Organization and Equipment, 508.  
Admission, 509.  
Scholarships, 509.

**Veterinary Medicine, The Department of**  
Prizes, 524.  
Course, 510.  
Text books, 511.  
Roster, 513-15.  
Instruction, 516-523.  
Museum, 523.  
Examinations, 524.  
Fees and Expenses, 524.  
List of Students.  
See Students.

**VETERINARY HOSPITAL**, 526.  
Vice-Provost of the University, 25.  
Wharton School of Finance and Commerce.  
Courses, 73, 167-171.  
Instruction, 252-270.

**WILLIAM PEPPER CLINICAL LABORATORY, THE**, 454.

**WISTAR INSTITUTE OF ANATOMY AND BIOLOGY, THE**, 453, 537-40.

Zelosophic Society, 600.  
Zoology, 248, 298, (C); 327, (G); 518, (V).







